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Energy Alberta 1986

Energy Resources Conservation Board
Review of Alberta Energy Resources in 1986

ERCB

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Energy Alberta

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Energy Alberta is an annual review of energy developments in the province, with reference to national and international events as they appear to have affected Alberta. The review is published by the Energy Resources Conservation Board (ERCB) to provide an overview of Alberta's energy sector and its importance to the province.

Another major objective of this issue is to inform Albertans of the kinds of work the ERCB does in their service.

Your reactions to this edition of Energy Alberta will be greatly appreciated. Please call or write ERCB Communications Group, 640 - 5 Avenue S.W., Calgary, T2P 3G4; telephone 403-297-3757.

Oil

Gas

Oil Sands

Coal

Hydro

Metric/Imperial Energy Equivalents

Oil
1 cubic metre = 6.3 barrels
Natural Gas
1 cubic metre = 35.3 cubic feet
Coal
1 tonne = 0.98 long ton (2240 pounds) = 1.1 short ton
Distance
1 kilometre = 0.621 miles
Energy
1 petajoule = energy equivalent of 164 000 barrels of crude oil
1 petajoule = energy equivalent of 1 billion cubic feet of gas

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A troubled year for Alberta's energy industry

Throughout this 1986 edition of **Energy Alberta** the reader will find mention of the negative effects resulting from the drop in world oil prices which occurred as the year began. While it is not our intention to unduly emphasize this matter, it clearly affected almost all segments of the Alberta economy and thus cannot be ignored. Energy prices have shown signs of stabilizing and, at press time, 1987 seems to be shaping up to be a better year.

The language of energy - in which we try to bring improved understanding to some of the technical terms used in this publication:

1. **Deregulation** - refers to the process of moving from a marketing system in which the price or production of energy resources (such as oil or natural gas) is determined primarily by government, to a system determined primarily by the market forces of supply and demand.

2. **Royalty Holiday** - royalty is the Alberta Government's share of whatever resource is being produced. A royalty holiday occurs when producers are allowed to stop paying all or part of the government's share for a specified time. Royalty holidays often are used to encourage exploration or development drilling.

3. **Export Flowback** - a payment to Alberta gas producers to ensure that they all received the same price for natural gas, regardless of where the gas was sold. This payment was financed by a fund consisting of the difference between the Alberta border price for gas (plus transportation costs), and the higher U.S. export price (set by the federal government). Export flowback was discontinued as an outcome of deregulation.

4. **Take or Pay** - a condition of contracting obligating wholesale gas buyers to buy a minimum amount of natural gas (the "take"). If their customers then were unable to take delivery of agreed-to volumes, the wholesaler was required to pay for it anyway. With the current oversupply of natural gas, the effects of deregulation, and increased competition among sellers, take or pay clauses in contracts are no longer in widespread use.

5. **In Situ** - commercial development of synthetic crude oil currently relies on mining the oil sands. The recovery of deeply-buried bitumen and dense, heavy oils requires the thinning of the oil to make it mobile, followed by the application of pressure (steam, or fire) to make it flow. Because these mobility aids must be applied to the resource in the ground, the technique is termed *in situ* – literally, *in-place* recovery.

Important Events of 1986

...the changing world of Alberta energy

The major event affecting the Alberta oil and gas industry in 1986 was, of course, the dramatic decline in world oil prices experienced at the beginning of the year.

World Oil Prices

Increased world oil supply, combined with new pricing mechanisms aimed at improving OPEC's market share of production, resulted in world oil prices falling to $10 U.S. per barrel by July 1986, one-third the November 1985 price. Alberta oil prices, having been deregulated in June 1985, responded accordingly, resulting in Alberta's 1986 oil prices averaging only one-half 1985 levels.

The response by the oil and gas industry was equally dramatic. Price instability, brought on by the official abandonment of price controls by OPEC, created a great deal of uncertainty in the Alberta oilpatch. Industry cash flow was severely constrained, resulting in a sharp reduction in Alberta drilling activity, the suspension of some projects, and significant unemployment. In attempting to mitigate the negative impacts of lower oil prices, the federal and provincial governments announced changes to existing tax and royalty structures for oil and gas.

Government Policy Initiatives

Following the 31 March 1986 elimination of the Alberta Petroleum Incentives Program, the following changes were made to improve industry cash flow:

- On 1 April 1986, the Alberta Government announced the Exploratory Drilling Assistance Program, as well as an enrichment of the Alberta Royalty Tax Credit level from 75 per cent to 95 per cent. On 4 June 1986, the Development Drilling Assistance Program was announced, to encourage drilling on Crown lands, as well as a Geophysical Assistance Program, to assist that sector of the petroleum industry, and a Well Servicing Assistance Program, to support employment in the petroleum service industry. The aggregate assistance of these programs was $500 million. They expired 31 December 1986.
- On 29 October 1986, the Alberta Government also announced a one-billion-dollar assistance package intended to stimulate energy activity and investment, create jobs, and contribute to Canada's long-range energy security. An enriched Royalty Tax Credit Program was extended to 31 December 1987, to assist smaller producers. The average gross royalty rates for old and new oil and gas, were reduced by 4 per cent and 12 per cent, respectively. Effective 1 October 1986, a new drilling incentive program — based on crude oil royalty holidays of five years, for wells located outside pool boundaries — came into effect for wells spudded on or after 1 October 1986 and before 1 November 1987. Additionally, 3-year and 1-year royalty holidays will apply to wells spudded in the two successive years.

- The federal government eliminated the Petroleum and Gas Revenue Tax (PGRT) effective 1 October 1986.

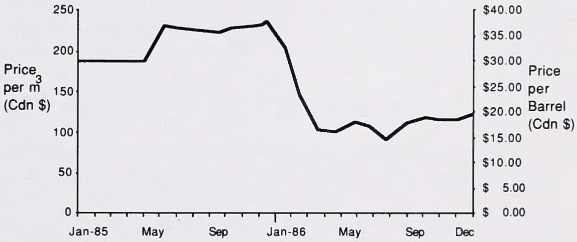
Crude Oil Supply

Alberta's 1986 oil supply was not affected by the drop in oil prices to the same extent as was industry cash flow and activity. Most of Alberta's oil is conventional production, generally the least costly source of oil. Because oil prices did not decline for an extended period of time, uneconomic, shut-in production did not become significant. Moreover, when the costs of production at the Suncor and Syncrude oil sands plants exceeded the going price of synthetic crude oil, government tax and royalty reductions helped to maintain operations. Additionally, both plants were successful in reducing their unit costs of production during this same period. Esso actually increased bitumen production at its Cold Lake plant, but postponed additional phases of the project originally scheduled to begin construction in 1986.

Although Alberta's 1986 total oil supply was not greatly affected, future production may be reduced if prices remain well below $20 U.S. per barrel. Some proposed in situ oil sands plants may not come on stream, some enhanced oil recovery (EOR) projects may not proceed, and lower drilling activity could adversely affect future oil supplies. However, on a more positive note, new discoveries of conventional crude oil have been larger than expected over the last two years, which suggests that if this trend continues, conventional oil productivity in the 1990s may not decline as much as previously forecast.

1. Alberta Weighted Average Field Price Light and Medium Oil

The Alberta Petroleum Marketing Commission ceased its price setting activity in June 1985. At about the same time, world oil prices began to fall, resulting in Alberta crude oil prices dropping 50% within four months (December 1985 to March 1986). During 1986, prices began to rise slowly; however, price fluctuations continued through the year.



Prorationing Update

Following an upward revision of available supply, Alberta's 1986 shut-in of crude oil was estimated to average 17 000 cubic metres per day, largely because of insufficient pipeline capacity. With completion of the Interprovincial Pipe Line expansion program in 1987, it is expected that provincial pipeline delivery capacity will be adequate to handle all of the crude oil produced in Alberta. Availability of markets then will determine whether or not any Alberta oil will be shut in.

Following deregulation of oil prices and markets, the existing Alberta prorationing system was reviewed by a task force chaired by the ERCB, and including the Independent Petroleum Association of Canada and the Canadian Petroleum Association. A modified prorationing plan, developed by the task force, and endorsed by the Alberta Petroleum Marketing Commission and the Small Explorers and Producers Association of Canada, will be implemented in June 1987, replacing the existing system, including the supplementary sales program. The objective of this new system will be to improve overall flexibility in marketing Alberta's oil, while continuing to provide for producer equity.

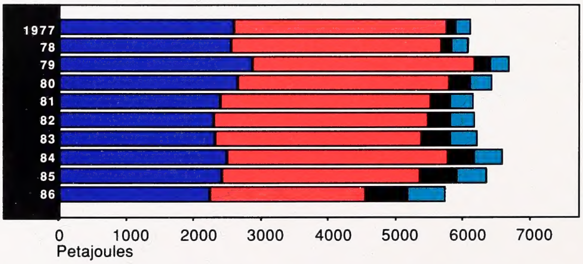
Natural Gas Prices and Markets

Events in Canadian gas markets, in 1986, were shaped by an October 1985 agreement between the Federal, Alberta, British Columbia and Saskatchewan governments. As provided in this agreement, domestic gas prices were deregulated on 1 November 1986, and the Alberta export flowback system was eliminated.

In 1987, both the ERCB and the National Energy Board (NEB) will review their policies and tests for removal of natural gas from the province, or country, to develop new methods of providing for the reasonable needs of the domestic user while, at the same time, allowing for freer access to export markets.

In the United States, regulatory initiatives had the initial effect of restricting Alberta gas producers' accessibility to U.S. markets for short term, interruptible gas sales. The intent of these initiatives, however, was to encourage interstate pipeline companies to move toward more open access. Take or pay exposure has so far made interstate pipeline operators reluctant to agree to transport gas which will compete in markets served by their existing systems. Moreover, the U.S. Federal Energy Regulatory Commission's "as billed" decision discriminates against Canadian gas by preventing negotiated contract provisions and costs, already approved by Canadian and U.S. regulatory agencies, from being passed through, effectively reducing net-backs to Alberta producers.

2. Alberta Hydrocarbon Energy Resources
10-year production



Alberta's Energy Resources

...what they are, what happens to them, and what's left for the future

Alberta has very significant reserves of the most commonly-used energy resources, including conventional light/medium oils, natural gas, oil sands/bitumen, coal, and hydro electric power. Knowing how these resources are being sought, developed, produced and marketed, and how much of each resource we have in reserve, are vital factors in planning for both the Alberta and Canadian energy futures.

3. Alberta's Energy Resources (in petajoules)

Remaining reserves at the end of 1986	Conventional Oil and Equivalent	24,940
	Natural Gas and Equivalent	71,060
	Bitumen and Synthetic Crude Oil	154,000
	Coal	495,000
1986 Production	Conventional Oil and Equivalent	2,250
	Natural Gas and Equivalent	2,500
	Bitumen and Synthetic Crude Oil	620
	Coal	580
	Hydro	5

		To Alberta	To Other Provinces	Exports	Total
1986 Sales	Crude Oil and Equiv.	645	1,250	975	2,870
	Gas	765	1,035	700	2,500
	Coal	347	43	175	565
	Hydro	5	0	0	5
	Total	1,762	2,328	1,850	5,940
	Per Cent of Sales	30	39	31	100

Reserves, Production, Sales — An Overview

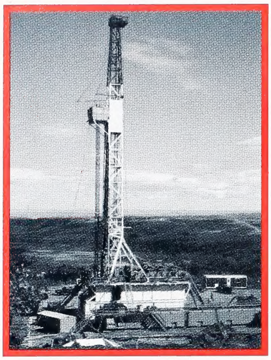
Drilling for conventional oil and gas decreased 39 per cent during 1986. Drilling for coal decreased 28 per cent, for oil sands 75 per cent.

Conventional oil and gas reserves represented only 13 per cent of total provincial energy reserves in 1986, but 84 per cent of total production. Remaining oil and gas reserves continued to decline, as production exceeded new discoveries and additions to available supply. This trend is expected to continue as the Western Sedimentary Basin matures as an area for conventional oil exploration and development, with fewer and smaller prospects remaining to be discovered.

In contrast, less than 0.5 per cent of remaining established reserves of bitumen and coal were produced in 1986. Taken together, these resources constituted 20 per cent of Alberta's total 1986 energy production, but 87 per cent of remaining established reserves.

When the production rate for each energy resource is compared to remaining reserves it is possible to calculate how many years the current reserves will last, if production is maintained at current levels.

While the 1986 reserves-to-production ratio for conventional crude oil was only 12 years, this does not imply that all conventional reserves will be depleted by 1998. Rather, it is an indication of the adequacy of current reserves in relation to current depletion rates.



After accounting for all reserve additions resulting from new wells, and from enhanced recovery schemes, plus the results of a 1986 reassessment of the reserves in existing pools, additions to Alberta's reserves of conventional crude oil amounted to 39 million cubic metres, down from 64 million cubic metres in 1985. Alberta produced 53 million cubic metres of conventional crude oil in 1986, a net reserves downsizing of 14 million cubic metres.

Gas reserve additions in 1986 amounted to 22 billion cubic metres, which was about one half the 1985 additions. After accounting for 1986 production of 70 billion cubic metres, the remaining gas reserves in Alberta decreased by 48 billion cubic metres from 1985.

Reserves of bitumen and synthetic crude oil were essentially unchanged from the previous year. Reserves of thermal coal increased substantially because of fuller delineation, whereas metallurgical coal reserves decreased slightly because of mining in some areas being ruled out by new integrated resource plans for sensitive environmental areas of the province.

Certainly, a basic trend seems clear; Alberta's conventional oil reserves and productivity are dropping, while production from oil sands is increasing. It is expected that these resource figures will balance out as we approach the year 2000, and that total oil production from Alberta will remain relatively constant for many years to come.

The pattern of sales of Alberta's energy production has shifted significantly during the last year, largely as a result of deregulation. Oil prices and markets have increasingly focused on the midwestern United States and have resulted in a higher proportion of sales volume to the export market. Conventional crude oil exports have doubled, and exports of bitumen-condensate blend also have increased, while gas exports have declined. The demand for Alberta oil in eastern Canada also has declined, partly due to a reduction in demand for oil products, but mainly as a result of market displacement by crude oil imports, which were 28 per cent higher in 1986 than in 1985. Sales of Alberta's conventional oils, within Alberta, continued to represent 28 per cent of the total produced in the province. A drop in sales of Alberta gas, within Alberta, coupled with a sharp decline in gas exports to the United States, outweighed a small increase in sales to other Canadian markets, for an overall decrease in gas sales from 2940 petajoules in 1985 to 2500 petajoules in 1986. Coal sales were essentially unchanged.

Conventional Crude Oil

Obtaining improved efficiency in recovering oil from existing reservoirs, through man-made efforts, is referred to as enhanced oil recovery (EOR). Without EOR operations, only 20 per cent of the conventional oil reserves discovered so far in Alberta would be recoverable. However, EOR programs have increased the average provincial recovery rate to more than 28 per cent, to date adding more than 662 million cubic metres to Alberta's total recoverable oil reserves.

By the end of 1986 there were 638 EOR projects operating in the province. They ranged in size from single injector/producer wells, to complex projects involving dozens of injection wells maintaining pressure in hundreds of producing wells.

The most common EOR method is water injection, also called water flooding, in which water is injected into the producing formation to force the oil toward the producing wellbore. In 1986, there were 580 waterflood projects operating in Alberta.

The more technically-complex miscible drive techniques also are being used in Alberta. Miscible drive involves injecting various hydrocarbon solvents, or gases (such as liquefied petroleum gases, natural gas, carbon dioxide, or a mixture of these), into the reservoir to move the oil.

Because these schemes can be very expensive, Alberta's miscible flood activity levelled out in 1986, with three previously approved projects deferred. At year-end 1986, 47 miscible flood projects were operating.

The oil industry, like other industrial users, needs fresh water to pursue its business successfully. In particular, fresh water is needed as an injection fluid in certain EOR waterflood schemes. About 25 per cent of this water comes from groundwater sources (subsurface aquifers). In reponse to concerns expressed in rural areas, a committee was formed by Alberta Environment in late 1985, to develop a groundwater allocation policy for oil field injection purposes. This committee is made up of representatives from the oil industry, government, agricultural and public interest groups, and the ERCB. As 1986 drew to a close, this committee was finalizing a new Alberta groundwater allocation policy.

Oil Sands

Production from Alberta's oil sands increased in 1986, largely as a result of continued development of in situ bitumen projects in the Cold Lake area, and higher synthetic crude oil production at Alberta's two oil sands mining plants. Production from the 31 existing oil sands experimental schemes equalled 2.1 million cubic metres of crude bitumen. Primary and commercial in situ production provided another 2.6 million cubic metres, for a total of 4.7 million cubic metres for the year. Both Syncrude and Suncor set new synthetic crude oil production records of 7.3 million cubic metres and 3.2 million cubic metres, respectively.

The ERCB gave approval to Suncor's Burnt Lake commercial project, which is located within the Primrose Air Weapons Range near Cold Lake. The first phase was expected to cost $119 million, of an expected total of $1.34 billion (1985 dollars). Total project employment would approximate 430 people. Similarly, Dome's commercial project, estimated to cost $575 million (1984 dollars), and also approved for the Primrose Range, was expected to create some 180 permanent jobs. Both these projects were put on hold awaiting better crude oil prices.

Continued expansion of Esso's Cold Lake commercial project is expected to go ahead. Approval for phases 7 through 10 was issued by the ERCB in September 1986. These phases will cost approximately $350 - 400 million (1985 dollars) and will generate some 130 permanent jobs.

In September 1986, the ERCB approved the expansion of Alberta Oil Sands Technology & Research Authority's unique underground oil sands test facility located 45 kilometres north of Fort McMurray. Rather than open pit mining, two large-diameter vertical shafts and 500 metres of horizontal underground shafts, previously had been drilled into the limestone formation underlying the oil sands deposit. The ERCB now has given approval for the underground mine access to be expanded by 2000 metres, and to drill upwards into the oil sands. Then, by injecting steam into the oil sands deposit to warm it, the hot bitumen will flow down into a gathering system in the horizontal tunnels.

Shell Canada, in association with Solv-Ex Corporation, announced plans to proceed with engineering feasibility studies for a proposed $260 million experimental oil sands mining and extraction project designed to produce 7500 barrels of bitumen per day. Phase 1 of the project was approved by the ERCB in 1986. It involved the transportation of 1500 tonnes of oil sands, from Shell's Athabasca lease to a Solv-Ex test plant in Albuquerque, New Mexico. Shell is reviewing the test results and, upon acceptable economic forecasts, may decide to proceed with Phase 2, which involves constructing a Solv-Ex extraction plant near Fort McMurray during 1988.

Involvement with Communities

Community involvement is becoming a major component of the planning process for a number of corporations operating in Alberta. For example, prior to applying to the ERCB to change its Wolf Lake project from experimental to commercial status, BP Canada sought the advice of a number of community associations and the Tribal Chiefs Association. While some concerns were expressed, and subsequently dealt with, there was no public opposition to the project. A decision on this application is expected by mid-1987.

Prior to seeking approval to expand the mine area of its oil sands facilities, Syncrude sought the advice of key government departments and the Fort McKay Indian Band. In this case there were major concerns expressed by the Native people regarding reclamation, mine discard areas, and the social consequences of increased development. After a productive period of negotiation, which saw the Native people become an integral part of the company's planning process, the concerns were resolved without an ERCB public hearing.

Prior to seeking an expansion of its Elk Point heavy oil operations, PanCanadian Petroleum undertook extensive negotiations with local landowners. As a result, the ERCB was able to give approval to Phase 1 of a 3-phase project that will see the company tie in 113 existing wells, and drill an additional 165 wells over the next 20 years.

Also in the Elk Point area, Amoco Canada Petroleum Ltd. received the advice of local landowners before seeking permission to reduce well spacing from 16 hectares to 4 hectares, add 14 sections of land to its project, and expand production from 640 cubic metres to 1280 cubic metres per day. Again, the ERCB was able to grant approval without a public hearing because affected landowners had been consulted and their concerns addressed by the company.

Natural Gas

Deregulation of natural gas prices and markets, in both Canada and the United States, together with lower energy prices worldwide, has had a major impact on Alberta gas, which now finds itself in an extremely competitive environment. Bellwether "spot sales" of gas to the lowest bidder have become widespread. As a result, both the volumes of gas sold and the prices being received for it, have dropped. It may be some time before the natural gas market sorts itself out and an improved profit picture is restored for Alberta producers.

Despite the general unease in world oil and gas markets, sulphur markets remained relatively stable. The world price for sulphur averaged $130 per tonne (U.S.). Sales exceeded production during the year, continuing the drawdown of Alberta's sulphur stockpiles.

Alberta's sulphur recovery guidelines, in effect since 1980, were reviewed in 1986. An ERCB/Alberta Environment task force suggested higher sulphur recovery requirements for some new plants. The task force report has been reviewed by industry, and by public and special interest groups. Although no decision has yet been made, any changes to the existing sulphur recovery guidelines will be announced by the ERCB and Alberta Environment.

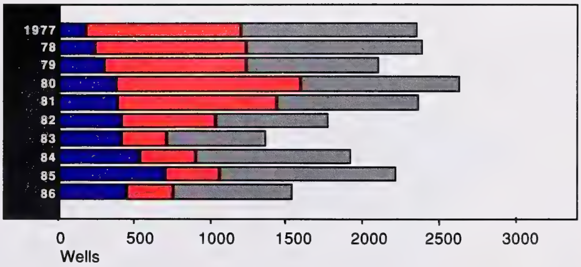
The controversy about field extraction of ethane continued during the year. Until the 1980s, the only economical way to remove ethane from natural gas was to reprocess the gas at large straddle plants located on major sales gas pipelines. The ethane and other liquids recovered then were used locally, or sent out of province to petrochemical plants for further processing and refinement. Today, however, technology and economics, together with a growing Alberta market for ethane in EOR schemes, have encouraged producers to recover ethane at field processing plants. As a result, straddle plant operators are not receiving as much ethane as they have in the past, and they have been actively raising their concerns with the ERCB and the provincial government.

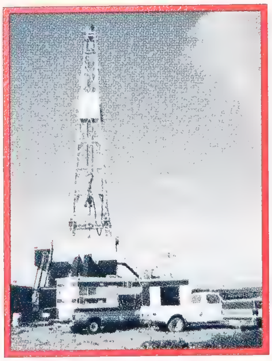
Note: Charts 4 through 19 graphically tell the story of the exploration, production, and reserves of Alberta's hydrocarbon resources.

4. Oil and Gas Wells
— Exploration

Total exploratory wells drilled in 1986 decreased 30%. The success rate continues to be 50%. The intent of the majority of wells drilled in 1986 was oil.

▨ Abandoned and Other

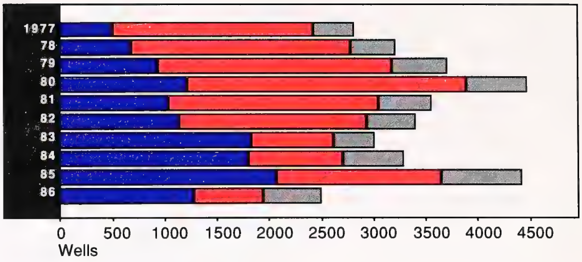




5. Oil and Gas Wells
—Development

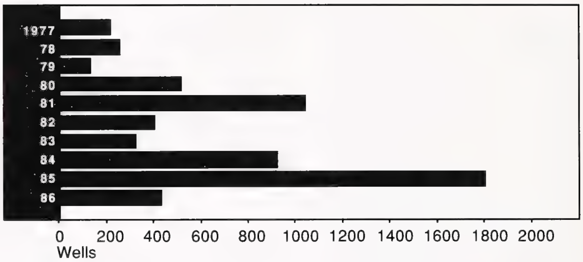
The number of development wells drilled in 1986 decreased by 43%. Drilling success rate was approximately 80%.

▨ Abandoned and Other



6. Oil Sands Wells

The rapid expansion of the bitumen sector came to an abrupt halt in 1986, with numbers of wells drilled only one quarter the number drilled the previous year. Bitumen production is more costly than conventional oil, thus more sensitive to lower prices.



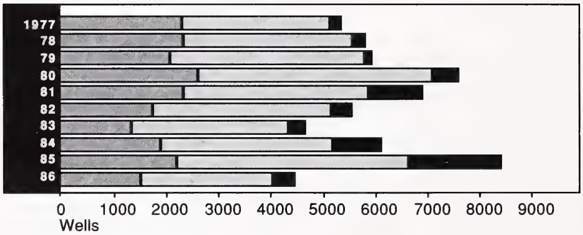
7. Total Wells Drilled

Significant decreases in wells drilled in all three categories resulted in total 1986 drilling activity being at its lowest level in 10 years.

▨ Exploratory

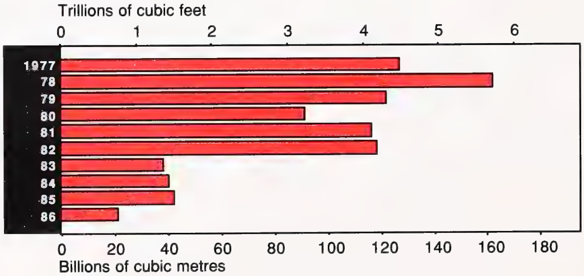
░ Development

■ Oil Sands



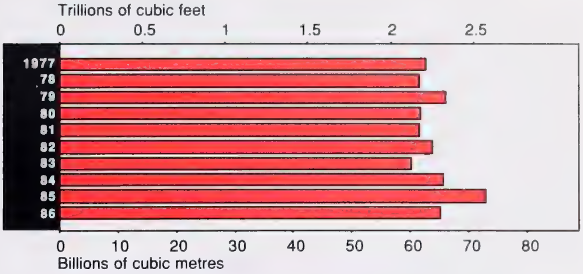
8. Additions to Established Gas Reserves

As a result of reduced drilling for natural gas, 1986 reserve additions were at their lowest point in10 years. This drilling decline was due both to reduced prices and to the large volumes of natural gas that remained shut in because of a lack of markets.



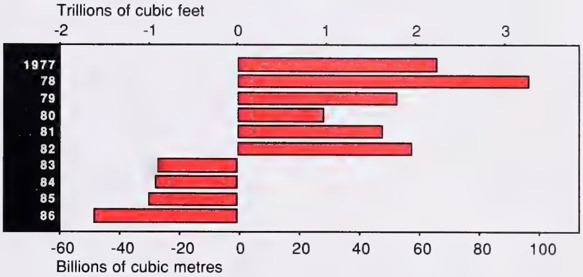
9. Gas Production

Production of natural gas, in 1986, remained at its 10-year average. Production continues to be considerably less than productive capacity due to a lack of markets.



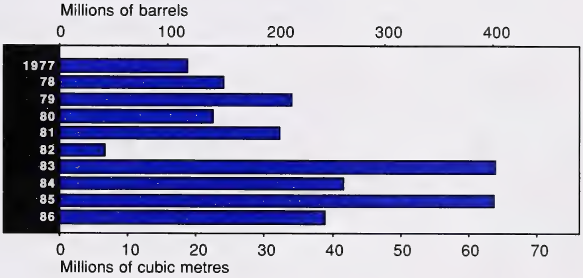
10. Changes in Remaining Established Gas Reserves

The draw-down of Alberta's natural gas reserves continued in 1986, as production once again greatly exceeded additions to reserves.



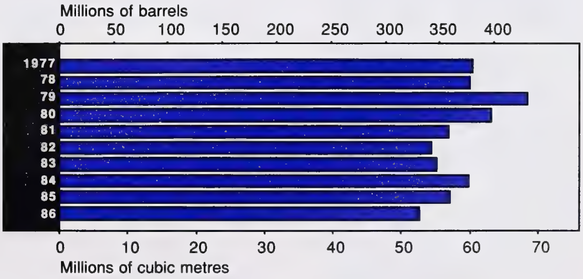
11. Additions to Established Oil Reserves

In spite of the drop in numbers of oil wells drilled, additions to conventional oil reserves remained at a rather high level in1986, although down considerably from 1985.



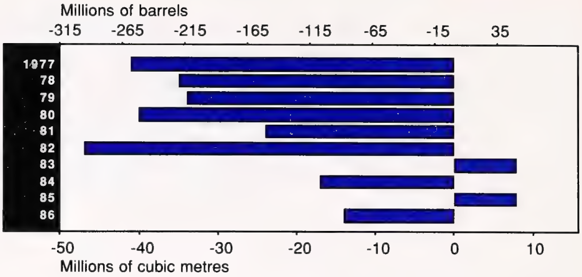
12. Conventional Oil Production

Conventional oil production declined slightly in 1986. A contributing factor was inadequate pipeline capacity.



13. Changes in Remaining Established Oil Reserves

Alberta's conventional oil reserves continued to be drawn down in 1986, with production exceeding additions, as it has for 8 years out of the last 10.

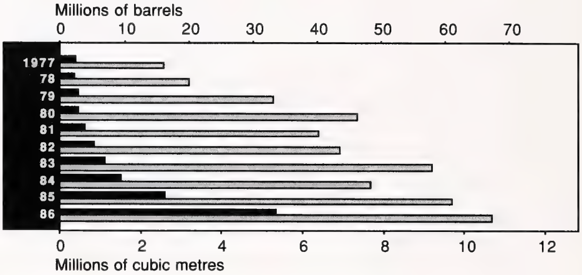


14. Bitumen and Synthetic Crude Oil Production

Production of synthetic crude oil from Alberta's two oil sands mining projects continued to increase, reaching a record high level for the second year in a row. Production of crude bitumen was almost double its 1985 volume.

■ Bitumen

▨ Synthetic Crude Oil



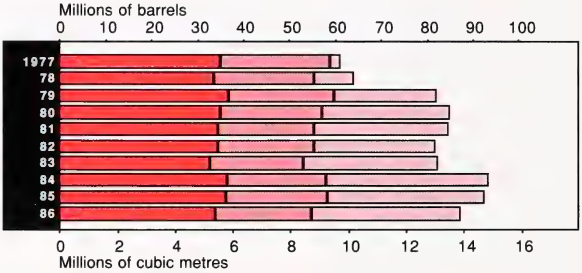
15. Natural Gas Liquids Production

Propane, butanes and ethane are constituents of raw natural gas. Their production is, therefore, related to the volume of natural gas produced.

🟥 Propane

▨ Butanes

□ Ethane

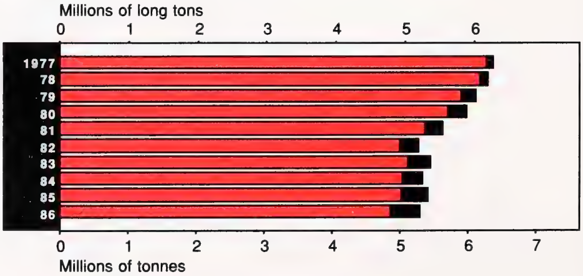


16. Sulphur Production

Sulphur production at oil sands plants continues to increase as synthetic crude oil production increases. Sulphur production at sour gas plants decreased moderately, from 1985 figures, mirroring a decrease in marketable gas production.

🟥 Gas Plants

■ Oil Sands Plants



Coal

After recording steady annual increases since 1974, Alberta's raw coal production dropped in 1986 to 23.7 million tonnes from 27.7 million tonnes in 1985. Marketable coal production increased, from some 24 million tonnes in 1985 to 24.5 million tonnes in 1986 due to increased production of subbituminous coal and increased plant yields of bituminous coal. Coal exploratory drilling declined, after experiencing slight improvement in 1985.

The main decline in exploration was in Alberta's Plains Region, with the Mountain Region showing increased activity, and the Foothills Region showing no change.

Remaining reserves of coal were increased by 16 per cent in 1986, as the ERCB caught up on its backlog of exploration data from companies drilling for coal. The energy equivalent of Alberta's coal now exceeds the combined reserves of all other provincial hydrocarbon resources. While new coal reserves were being added, mainly from the Plains Region, some known reserves in the Mountain Region were being eliminated to conform with the Alberta Government Integrated Resource Plans, which remove from future coal development protected areas such as Kananaskis Country.

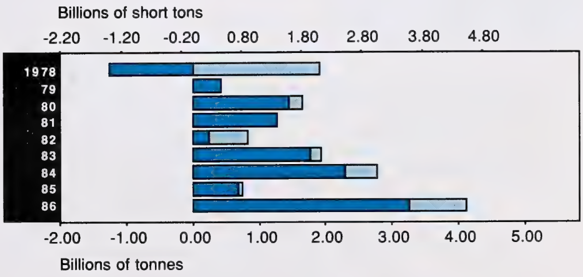
On the development side, Luscar Ltd. applied to the ERCB for a surface coal mine near Tofield to produce between 200 000 and 400 000 tonnes per year of subbituminous coal, depending upon industrial markets. Luscar's Diplomat mine, operated in the Forestburg area since 1941, suspended mining in 1986 due to deteriorating coal quality and declining domestic sales. In recent years, the Diplomat mine has been operating as a back-up reserve for Alberta Power's Battle River electric generating plant, and as a local domestic coal supplier.

In late 1986, Fording Coal Limited applied to the ERCB to develop a surface coal mine southwest of Brooks. The proposed mine is expected to produce between 100 000 and 300 000 tonnes of subbituminous coal annually for markets in Canada and the United States.

TransAlta Utilities' Highvale mine, west of Edmonton, produced close to its 1985 record of 11.8 million tonnes of subbituminous coal, for use in the Sundance and Keephills power generating stations.

17. Additions to Coal Reserves

In spite of low activity in coal exploration, very substantial additions continue to be made to coal reserves. 1986 saw an estimated 4 billion tonnes of coal added to Alberta's reserves.



🟦 Subbituminous

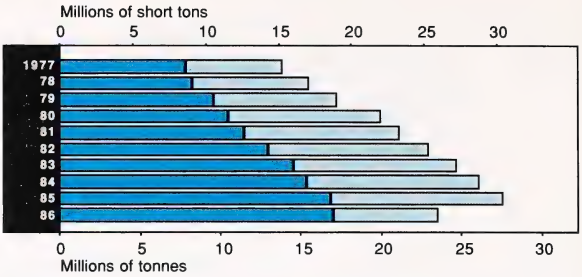
▨ Bituminous

18. Coal Mine Production (Raw Coal)

Subbituminous coal production increased slightly from 1985. Production levels of bituminous coal dropped significantly in 1986, due to oversupply on world markets.

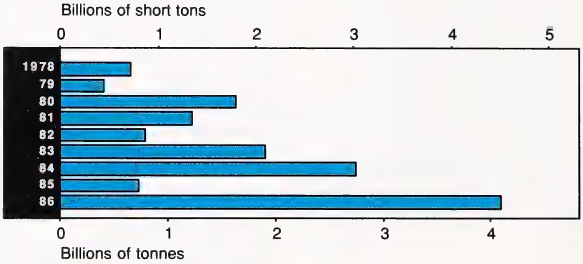
🟦 Subbituminous

🟩 Bituminous



19. Changes to Coal Reserves

More than 4 billion tonnes were added to Alberta's coal reserves in 1986.



Hydro & Electric

The slowdown in oil- and gas-related activities during the past year was a direct result of slumping world oil prices. Somewhat less obvious was the impact on other sectors of the Alberta economy. One of these was the electric utility industry, where load-growth forecasts became extremely uncertain in light of reduced economic activity.

While electric utility planners struggled with their forecasts, and engineers reviewed and adjusted construction schedules for new power plants, Albertans continued to be provided with excellent electric service. However, in mid-May of 1986, thousands of Albertans experienced — many for the first time — the difficulties of modern-day living without electricity.

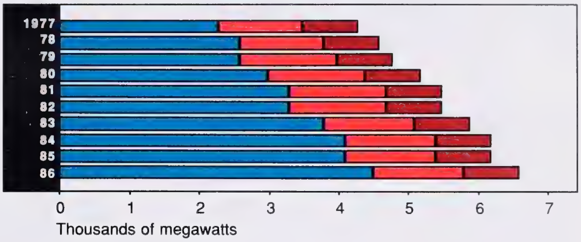
On 13 and 14 May 1986, south-central Alberta experienced one of the worst snow storms ever to hit the area. Beginning in the late afternoon the storm, which involved unusually strong winds and heavy, wet snow, affected an area extending from the Wetaskiwin-Camrose region in the north, to the U.S. border in the south, and from the mountains on the west, to the Saskatchewan border on the east.

This very severe storm caused extensive damage to electric transmission and distribution lines. More than 100 steel transmission towers were toppled. Thousands of wood-pole structures were destroyed. Highways and secondary roads became impassable, preventing electric utility workers from reaching damaged facilities and restoring service.

Some rural residents were without electric service for a week. It was, without doubt, the worst electricity blackout in Alberta's history. When weather conditions improved, and road travel became possible again, more than 600 technicians went to work repairing damaged power lines. The overall cost of repairing facilities and restoring electric service was estimated to be in excess of $13 million.

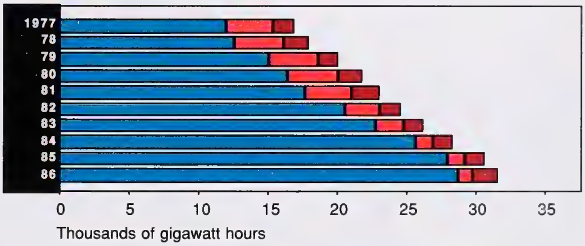
20. Electric Generating Capacity

Unit #1 of the Sheerness generating plant came on stream in January 1986, adding 400 megawatts of electric generating capacity to the Alberta system.



21. Electricity Generated

Long-term growth trends in electric energy generated in Alberta continue, with a modest but steady increase in the total electrical energy generated. The proportion of electrical energy generated from coal continues to increase, now comprising more than 90% of the total.



Pipelines

Pipelines play an important but largely invisible role in transporting energy resources. More than 180 000 kilometres of pipelines carry oil, natural gas, and other petroleum products from Alberta's thousands of production facilities to be processed, refined, and transported to consumers, and oilfield salt water to disposal wells. Because of the slow-down in drilling activity, the year also was slow for pipeline development. Applications to install new pipelines declined from 10 440 kilometres, in 1985 to 6840 kilometres in 1986. There were no major pipeline projects in 1986. The majority of the applications received were to construct the gathering lines used to move raw production from wells to initial processing facilities.

Involvement with the Public

Several 1986 pipeline projects proved to be interesting because they demonstrated effective public involvement. One was the replacement of a major portion of Alberta's first pipeline, which was built in 1912 from Bow Island to Calgary. The second was Gulf Canada's application to build a sour gas pipeline system in the Millarville/Bragg Creek area, just west of Calgary. The ERCB believes these two projects indicate a trend in which operators are involving landowners more effectively in the process of planning pipelines.

In the case of the Bow Island to Calgary pipeline, Canadian Western Natural Gas Company Limited (CWNG), used its past experiences in dealing with public concerns to develop specific criteria for route selection. Working directly with the affected people, CWNG proposed to use existing utility rights of way, to avoid historical or ecologically-sensitive sites, to minimize damage to cultivated land, and to locate its lines away from populated centres. As a result, the ERCB received no objections from the many affected landowners and was able to issue CWNG a construction permit in July 1986, without the need for a public hearing.

Perhaps the year's most significant example of public involvement in a pipeline project arose from Gulf Canada's plan to install three 10-kilometre pipelines, in a common trench, from the Millarville area to Esso's Quirk Creek gas plant. Two of these pipelines involved sour gas and sour condensate, both highly controversial topics.

Recognizing the area's history of concern regarding environmental and land-use issues, Gulf engaged in extensive community contact prior to requesting a construction permit from the ERCB. The company distributed a series of information brochures, made personal visits to landowners, and held public meetings to explain the project and to respond to residents' concerns and suggestions.

The company found it was able to respond positively to almost all major concerns raised. Minor route modifications were made, reducing possible impacts on future subdivision developments. Emergency shut-down valves were added at shorter intervals to reduce the potential release of hydrogen sulphide in the event of pipeline failure, and it was agreed that construction would be avoided during the peak tourist season at local guest ranches. Also, plans were developed to minimize the visual impacts of the pipeline right of way.

By late fall of 1986 all objections to the project had been withdrawn, and a potentially divisive public hearing had been avoided. ERCB's construction permit to Gulf included the conditions and revisions suggested by the public and agreed to by the company.

Pipeline Leaks and Breaks

The ERCB now requires operators to report all pipeline leaks and breaks, regardless of how small they may be, or how quickly they are repaired. Thus, while the number of recorded pipeline incidents has gradually increased since 1976, most difficulties now are resolved at an early stage.

Problems with pipelines carrying salt water, which is very corrosive, continued to dominate the statistics. Sour gas pipeline breaks, which are potentially the most serious in terms of public safety, represented only 3 per cent (21) of total 1986 incidents. Of the 21 sour pipeline incidents only 4 were actual pipeline breaks, with the largest volume of gas released being 12 cubic metres.

In 1986, the ERCB also initiated a review of operations and maintenance on all high-vapour-pressure pipelines within its jurisdiction. (These carry materials such as propane or butanes.) This review came in response to the National Energy Board's inquiry into the 1985 rupture of the Interprovincial Pipe Line near Camrose. There is industry-wide interest in both the NEB's recommendations, and the ERCB's related fact-finding effort, scheduled for completion in 1987.

New Computerized Application System

In February 1986, the ERCB's Pipeline Department implemented a computerized application processing system after more than 2 years of preparation. Because the ERCB receives, on average, more than 4000 pipeline permit and licence applications each year, both industry and the public will benefit from the improved accuracy and efficiency of this new system. For example, landowners frequently submit objections to pipeline projects before the company actually files its application with the ERCB. The new ERCB system enters a landowner's location in the database as soon as an objection is received. Then, when the application is made to the ERCB, a quick check can reveal to staff, and to the operator, that an objection has been lodged. This permits companies to address public concerns at the earliest project stages.

Sales and Distribution

...getting energy resources to markets

Declining oil and gas prices, in an increasingly deregulated energy industry, have caused interesting changes in the distribution of Alberta's energy products. The excess supply of gas in North America has reduced prices and made gas markets very competitive across the continent. As a result, gas export prices and volumes both have decreased by 20 per cent in 1986. Service to marketers was improved, however, as pipeline distributors tested moving new products in their systems or extended their market areas. The TransMountain and Cochin pipelines tested moving methanol. Rangeland moved heavy crude bitumen to Billings, Montana. TransMountain moved heavy crude oil to the west coast, destined for offshore markets.

The increased movement of heavy crude oil, and increased bitumen production, placed new pressure on interprovincial pipeline capacity, and on the ability of pipeline companies to move Alberta's total available oil supply to markets. This pressure was partially alleviated by completion of segments of the Interprovincial Pipe Line, Phase 2 expansion, in 1986.

Sulphur sales and distribution decreased modestly during 1986, with demand for the product remaining relatively strong.

Although demand for bituminous metallurgical coal was weak, this was not the case for subbituminous thermal coal. Increased utility consumption in Alberta outweighed a decline in residential/commercial demand for subbituminous coal.

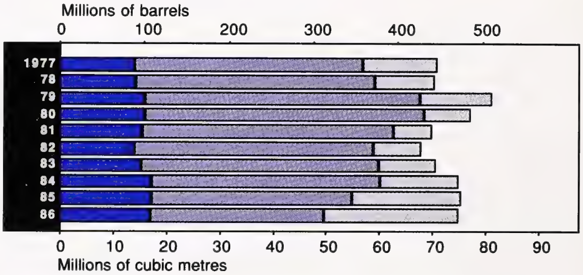
22. Markets for Oil and Equivalent

The trend begun in 1980 continues in 1986. Deliveries to Alberta users remained relatively steady. The importance of markets in eastern Canada continued to decline, while U.S. markets became more significant.

■ Alberta

▨ Other Canada

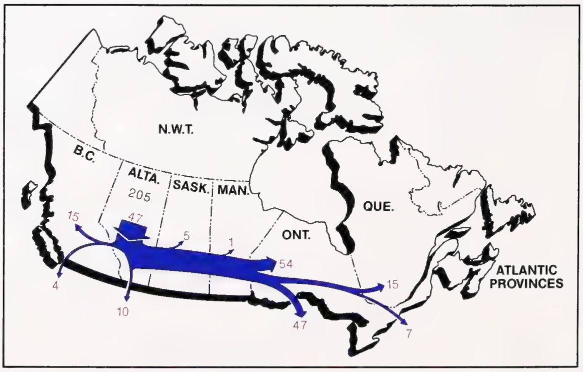
□ U.S.A.



23. Markets for Oil and Equivalent in 1986

Alberta's average daily deliveries of oil and equivalent to western Canada remained similar to previous years. Deliveries to Ontario, Quebec, and the Maritimes decreased by 11 000 cubic metres per day from 1985 levels, offset by a corresponding increase to the U.S.

Legend
Production
Deliveries

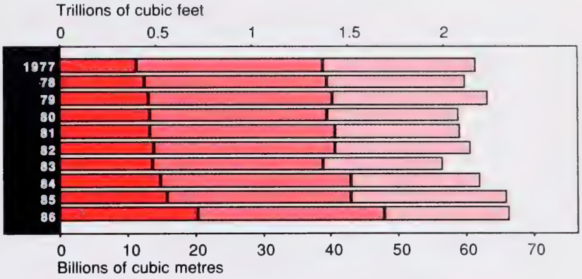


Thousands of cubic metres per day

24. Markets for Gas

In 1986, total deliveries of natural gas were similar to 1985. The proportion used in Alberta continued to increase, while there was a slight decline in deliveries to other provinces and to the U.S.

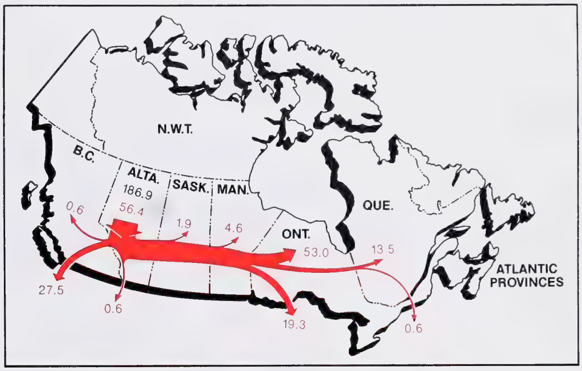
🟥 Alberta
🟥 Other Canada
🟥 U.S.A.



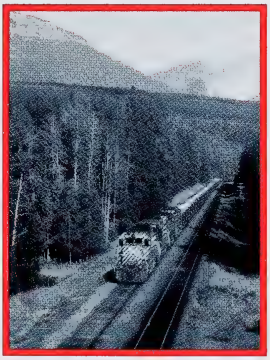
25. Markets for Gas in 1986

Total natural gas deliveries, excluding fuel and losses, from Alberta were 178 million cubic metres per day, with 56 million used in Alberta, 74 million exported to other Canadian provinces, and 48 million exported to the U.S.

Legend
Production
Deliveries



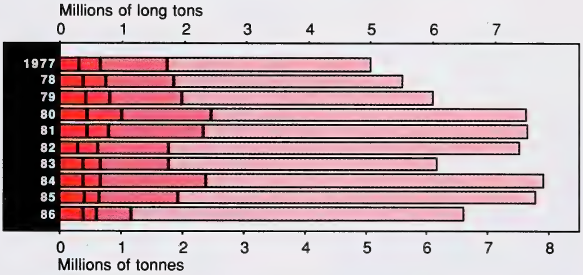
Millions of cubic metres per day



26. Markets for Sulphur

Of the 6.7 million tonnes of Alberta sulphur delivered in 1986, 420 000 tonnes were used in Alberta, 210 000 tonnes were shipped to other provinces, 5 450 000 tonnes were exported offshore and 580 000 tonnes were delivered to the U.S. The 1986 decline was due primarily to the U.S. reducing sulphur imports for the last 2 years.

🟥 Alberta
🟥 Other Canada
🟥 U.S.A.
🟥 Offshore



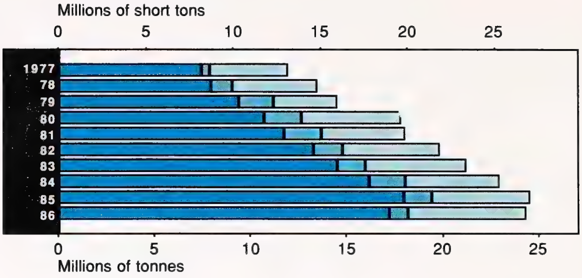
27. Markets for Coal

While total deliveries of coal remained constant in 1986, deliveries to other Canadian provinces declined, and deliveries to the U.S. and offshore markets increased, relative to 1985.

🟦 Alberta

🟦 Other Canada

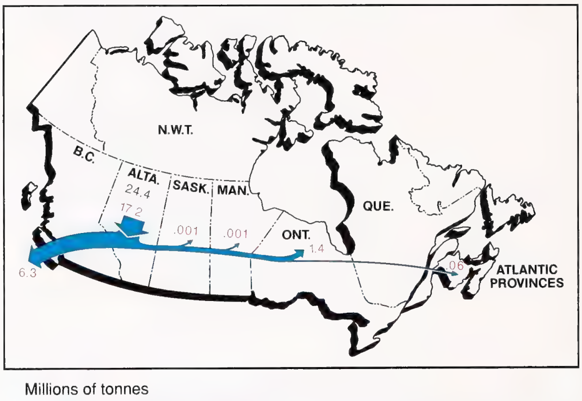
▨ Offshore and U.S.A.



28. Markets for Coal in 1986

Of the coal delivered in1986, 71% remained in Alberta, primarily for use in electrical generation. Ontario was the largest Canadian user, taking about 1.4 million tonnes. Of the 6.3 million tonnes exported, Japan was the largest buyer, at 4 million tonnes.

Legend
Production
Deliveries



29. Electric Energy Markets

Alberta does not export any electrical energy. Use of electrical energy in all Alberta sectors increased slightly from 1985.

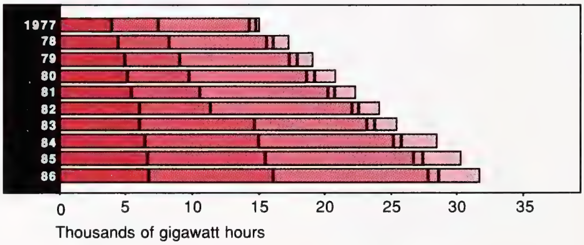
🟥 Residential and Farms

🟥 Commercial

▨ Industrial

▨ Transportation

▨ Industrial On-site Generation



Revenues, Investment, Employment

...energy powering Alberta's economy

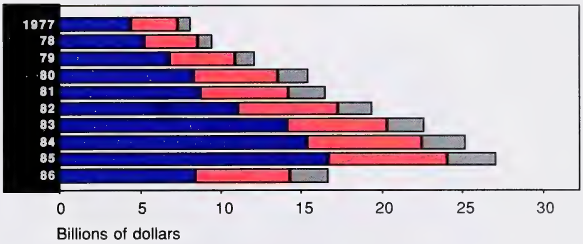
Revenues, investment, and employment all were significantly lower in 1986, as might be expected.

Sales Revenues

Alberta's total 1986 energy revenues were $16.8 billion, compared to $27 billion in 1985. Crude oil and equivalent revenues fell an estimated $8.3 billion, or almost 50 per cent. Revenues from the sale of marketable gas and natural gas liquids dropped $2.0 billion, or 23 per cent. Although the sales volume of gas and natural gas liquids fell more than the sales volume of crude oil and equivalent, when compared to 1985, the relative price of oil declined even further than that of gas. Sulphur revenues were reduced by 14 per cent, or $130 million. Benefiting from secure sales contracts, coal revenues decreased by only $8 million, or less than 2 per cent.

30. Gross Revenues
— All Hydrocarbons

Gross revenues from energy production decreased by 40% in 1986, an all-time record decline of $10.4 billion. Sales of oil and equivalent suffered a loss of $8.3 billion and gas (including ethane, propane, and butanes) accounted for the remaining $2.0 billion.



▨ Other

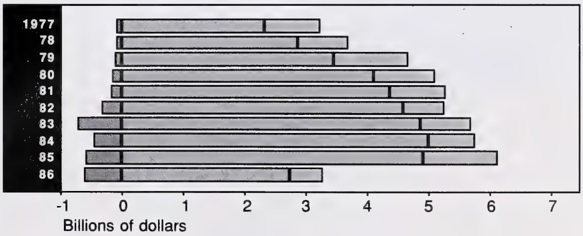
Alberta Government Revenues

Energy-related gross revenues to the province were $3.3 billion in 1986. Provincial government expenditures, in the form of incentives and assistance to the oil and gas industry, were $610 million, an increase of $30 million over 1985. Royalty revenues declined 44 per cent ($2.2 billion), while the sum of all other revenue sources – including the mineral tax, crude export tax, fees and rentals, and Crown land sales – was nearly 60 per cent lower ($710 million).

31. Alberta Government Energy Revenues

Net government revenues from the energy industries dropped by almost 52% in fiscal year 1986, amounting to $2.7 billion.

▨ Payments
▨ Revenues — Royalties
▨ Revenues — Other



Source: Alberta Energy, Finance and General Services

Investment

In times of market uncertainty, investment naturally suffers. In the Alberta energy industries it declined from $6.9 billion in 1985, to an estimated $4.1 billion in 1986, a drop of nearly 41 per cent. Investment in the conventional oil and gas industry declined by an estimated $2.3 billion, or almost 40 per cent. Similarly, oil sands investment was reduced by more than $500 million (47 per cent). The coal industry also experienced low levels of investment, partly resulting from the relatively low prices being paid for oil and gas, which lowered the demand for coal.

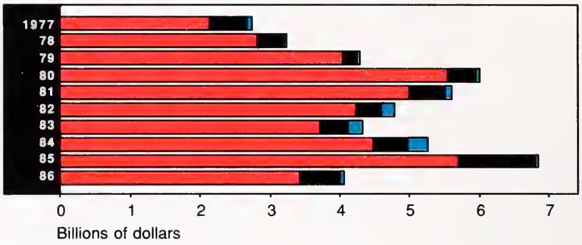
32. Energy Investment in Alberta

During 1986, the energy industry invested $4.1 billion in searching for and developing Alberta's energy resources - a 41% decrease from 1985. Alberta energy investment now has fallen to levels not experienced since the late 1970s.

🟥 Gas and Conventional Oil

■ Oil Sands

🟦 Coal



Sources: 1977 through 1985-Canadian Petroleum Assoc., Statistical Handbook; 1986-Oilweek Annual Review and Forecast (23 02 87, Page 23); Coal - Statistics Canada Catalogue #61205.

Employment

After reaching an all-time high in 1985, Alberta's energy sector employment fell back to its 1981 through 1984 levels. Contributing significantly to this decline were the conventional oil sector and heavy and non-conventional oil construction. Additionally, many companies — faced with difficult economic constraints — have been carefully downsizing over the last 4 to 5 years, resulting in a flat or slightly declining total job picture.

33. Employment in Alberta's Energy Industry

Essentially, there has not been significant employment growth in the energy sector for the last 5 years.

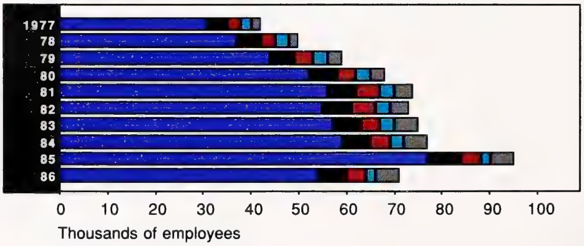
🟦 Oil and Gas

■ Oil Sands

🟥 Electricity

🟦 Coal

▨ Petrochemicals



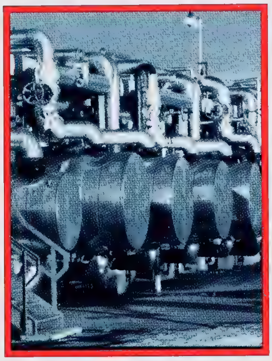
Sources: 1977 through 1984-ERCB Survey; 1985 and 1986 Oil and Gas Sector - Alberta Energy, Resource Statistics and Intelligence; all other sectors - ERCB Survey.

...current production and future trends

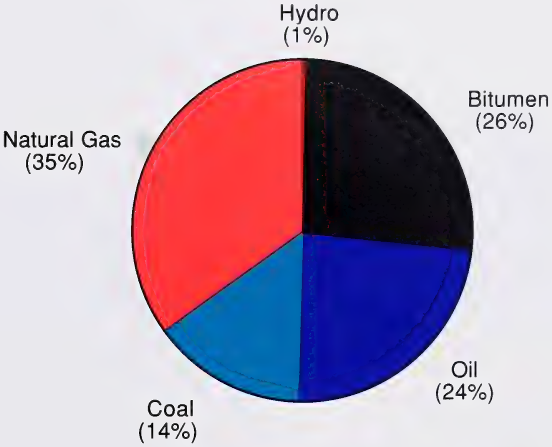
Alberta's energy resources supply not only provincial requirements, but also much of Canada's needs, as well as exports to the United States and to offshore markets. In this section we chart Alberta's own end-use requirements, its place in the Canadian energy supply picture, and its expectations for the future.

Energy Resource End-use in Alberta

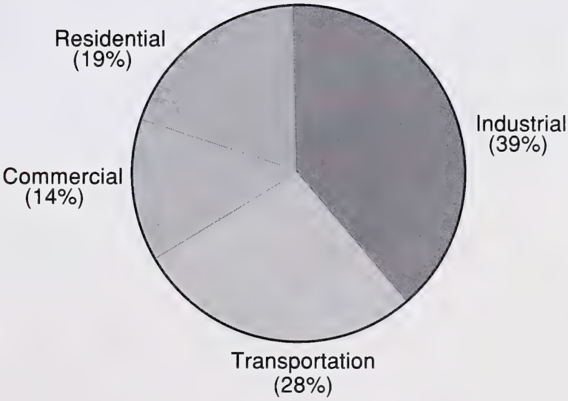
The well-being of Alberta's industrial society depends on a secure supply of energy. The energy resources used to meet Alberta's own requirements in 1986 are shown in figure 34. The relative importance of each end-use category is shown in figure 35.



34. Energy Resources to Meet Alberta's End-use Requirements



35. End-use Energy Requirements in Alberta

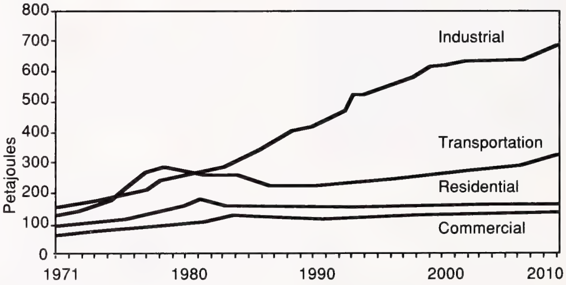


The ERCB's report on **Energy Requirements in Alberta, 1986-2010**, which was released in October 1986, indicated that residential and commercial use of energy in Alberta has remained constant since the beginning of this decade. Provincial transportation requirements peaked in 1981, and have declined significantly since then. This reflects improvements in energy efficiency by consumers. While current lower energy prices may mean that consumer conservation efforts will not remain as intense as they were during the late 1970s, the ERCB does expect longer term improvements in energy efficiency to continue.

In contrast to the levelling off in other sectors, Alberta's industrial sector has grown to the point that it now consumes almost two-fifths of all the energy required in Alberta. This reflects a trend towards processing more of Alberta's raw energy resources within the province. This includes the refining of crude oil and bitumen to produce petroleum products, the operation of world-class natural gas and natural gas liquids processing facilities to manufacture petrochemicals (mainly for export), and the upgrading of bitumen.

36. Secondary Energy Requirements by Sector

Total residential/commercial energy use rates are forecast to increase slowly, while transportation sector use is expected to grow at a slightly higher rate. In contrast, industrial sector use is forecast to more than double by the year 2000.



Alberta in the Canadian Energy Picture

Of all the energy produced in Canada, fully two-thirds comes from Alberta, as shown in figure 37. Canada's reliance on Alberta's energy is even more striking if one takes into account only the conventional crude oil, natural gas, and synthetic crude oil produced in Canada. Of these resources, Alberta produces 88 per cent of the Canadian total.

Reserves also are an important indicator of future trends. In 1986, Alberta's total reserves of crude oil, natural gas, and bitumen accounted for 90 per cent of Canada's total reserves in these three categories. Additionally, more than 75 per cent of all the coal in Canada is located in Alberta. At present, coal is a major fuel source for electric power generation in Saskatchewan, Ontario, Nova Scotia, and Alberta.

37. Alberta vs Canadian Reserves and Production (in petajoules)

Remaining reserves at the end of 1986	Alberta	All of Canada	Percentage reserves in Alberta
Conventional Oil and Equivalent	24,940	33,300	75
Natural Gas and Equivalent	71,060	86,360	86
Bitumen and Synthetic Crude Oil	154,000	154,000	100
Coal	495,000	640,000	77
Total	745,000	913,660	81

1986 Production	Alberta	All of Canada	Percentage production in Alberta
Conventional Oil and Equivalent	2,250	2,700	83
Natural Gas and Equivalent	2,500	2,700	92
Bitumen and Synthetic Crude Oil	620	620	100
Coal	580	1,450	40
Hydro	5	1,040	0
Nuclear		190	0
Total Production	5,955	8,700	68

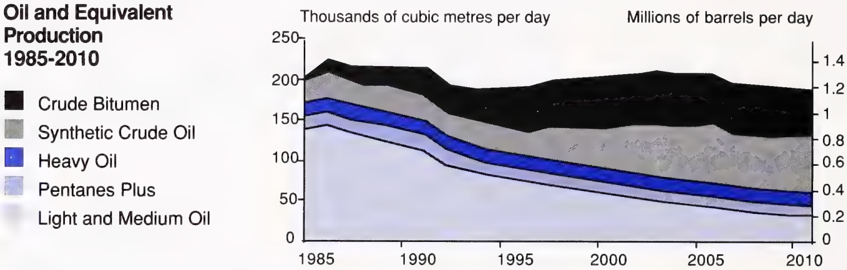
Current Production in Relation to the Future

Substantial changes in the production patterns of Alberta's energy resources are expected for the future. While conventional crude oil reserves are declining, production from oil sands is increasing. (See figure 38, below.) By 2010, conventional crude oil production is forecast to be only one-third of the 1986 rate. By that time, Alberta's conventional oil industry will be in the very mature stages of its development.

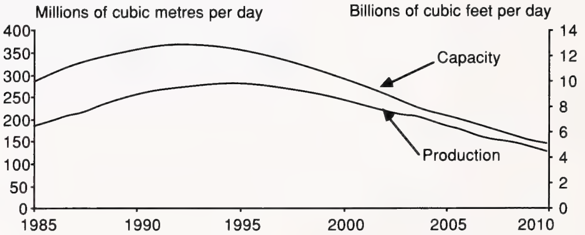
The situation is somewhat different for natural gas, as shown in figure 39. Today's production is substantially less than what could be achieved with better market opportunities. However, that situation is expected to change during the next decade, with Alberta's natural gas production continuing as a dominant source of energy well into the next century.

While forecasters predict that production rates for bitumen and synthetic crude oil will increase significantly in the next generation, the implications in terms of resource depletion are minimal because of the enormous bitumen resource base.

38. Oil and Equivalent Production 1985-2010



39. Gas Capacity and Production 1985-2010



...concerns arising from resource development

The term "environment" includes not only the physical environment, but also Alberta's human population — those people whose lives and livelihoods often are impacted directly by energy projects. The degree of negative impact on the quality of Alberta's air, water, soils, vegetation, and wildlife, largely is controlled by environmental performance standards, by monitoring, and by effective enforcement. Effectively managing these impacts is of growing importance in dealing with environmental issues in an holistic way.

Environmental protection is included as a planning element in both new and ongoing energy projects, and is seen to be a shared responsibility of all sectors of society, including governments, corporations, community groups, and individual citizens.

This section focuses on the issues surrounding sour gas developments, and provides an in-depth explanation of the tough, new requirements for drilling sour gas wells.

Sour Gas and Northeast Calgary

1986 marked the beginning of an important initiative in studying the risk factors associated with sour gas developments. Canadian Occidental Petroleum applied to the ERCB in 1984 to drill two sour gas wells 1.5 kilometres outside the city limits of Calgary, and to relocate and construct pipelines to service these wells and other existing facilities. Initially it was thought that an early ERCB hearing would be convened. However, the ERCB postponed its hearing several times to allow residents of 11 northeast Calgary communities the opportunity to participate in technical studies to determine the potential impacts such an expansion might have on them. One of those studies was conducted by the Sage Institute of Edmonton, which recommended that a further study be conducted to identify "realistic worst case scenarios" related to the possible uncontrolled release of sour gas from the proposed facilities. As a result, the ERCB set up an independent scientific investigation to assess the potential hazards. As this study (which is being done by Concord Scientific Limited of Toronto) progressed, an additional phase was added to include an analysis of risk. The first and second phases will result in the development of a new framework whereby worst case hazard and risk assessments may be simulated using a specially-developed computer model. The final phase of this work will be to apply the new computer simulation model to the proposed Canadian Occidental facilities. Results of this landmark study are expected to be released to the communities during the summer of 1987.

Sour Well Drilling: A Critical New Era

While northeast Calgary focused its concerns on the general risks of sour gas facilities, public concerns regarding sour well drilling have been high since 1982, when human error and equipment failure led to the worst sour gas drilling blowout in Alberta history. Since then, the ERCB has worked with industry, government, and the public, to strengthen the rules aimed at preventing blowouts during the drilling of sour wells.

Central to the issue of blowout prevention was the creation of a category of sour well known as a ***critical*** well. The term critical identifies those sour wells where blowout prevention is of paramount importance because of the potential for serious consequences if one should occur.

One of the major problems encountered during any blowout at a sour well is the uncontrolled flow of hydrogen sulphide gas into the atmosphere. Although the gas is colourless, it has a very offensive "rotten egg" odour at low concentrations. In higher concentrations, it can cause respiratory problems and death. Although there is no record of an Alberta private citizen being killed by hydrogen sulphide poisoning, deaths among industry personnel have occurred at the worksite.

Although the ERCB issues thousands of well licences each year, the number of critical wells licensed remains low. There were only 42 critical wells licensed in 1986. These low numbers have permitted the ERCB to focus the operator's special blowout prevention efforts on relatively few wells.

Problems: Human Error and Equipment Failure

Most blowouts are the result of human error or equipment failure. Thus, efforts aimed at preventing blowouts, and protecting public safety, have concentrated in six important areas:

1) sour well application review (to pinpoint critical wells)
2) drilling equipment
3) drilling procedures
4) crew training and supervision
5) rig inspections
6) emergency planning

Well licence applications must be submitted to the ERCB by all companies planning to drill oil or gas wells in Alberta. The applying company must state whether or not its research indicates that sour gas is likely to be encountered while drilling. Before any drilling may begin an expert ERCB team screens each application, checking for the two primary criteria which determine if a sour well will be classified as critical: 1) the potential hydrogen sulphide release rate from the well, and 2) the proximity of the proposed well to towns and villages, or to public facilities such as campsites or schools.

One step used to determine the hydrogen sulphide release rate is to check the company's projections regarding the proposed well against the most current geological data from similar wells. This cross-check minimizes the chances that a highly productive sour well could be drilled without the extra precautions now required for critical wells.

Backup equipment is an important factor in making certain that drilling problems are controlled in the early stages, before developing into full-scale blowout. For example, there now must be twice as much drilling mud in reserve at the site as will be needed for drilling. (This "mud" holds subsurface pressures in check.)

Virtually all aspects of the drilling procedures for critical wells have been strengthened through the combined efforts of the ERCB and the sour gas industry.

Admittedly, human error can never be totally overcome, but careful training and strong supervision can go a long way towards ensuring well-qualified, experienced drilling crews on all critical wells. The ERCB now specifies the training required of on-site supervisors, and verifies by means of regular drills, the ability of rig workers to handle complex well-control procedures.

Inspection is Vital

In addition to regular inspections by the drilling contractor, the ERCB usually makes three inspections prior to and during drilling into the critical zone where sour gas is expected. The ERCB's critical well inspections are known to be tough. If serious problems are found, drilling operations are suspended until corrections have been made.

These strong, co-operatively-developed measures appear to be meeting with considerable success. Since 1984, there have been no blowouts during the drilling of critical sour wells in Alberta.

Emergency Planning — Just in Case

The ERCB recognizes that no amount of regulation can guarantee that a critical well never will blow out. As a result, if you live within a prescribed distance of a proposed critical well, you will be protected by a detailed, site-specific emergency response plan prepared by the company drilling the well. You must be contacted by the company as part of its work in preparing that plan. The company will not receive a drilling licence until this work has been completed.

If the worst happens, and a critical well does blow out, the ERCB will quickly establish a Main Control Headquarters in the area to assist the company and to co-ordinate the work of a provincial emergency response team. A Media and Public Inquiry Centre at this control headquarters will keep people in the general area informed of any action that may be required to protect their health and safety. (By the way, ERCB's emergency planning doesn't apply only to critical wells. Similar emergency plans exist for all sour gas facilities in the province.)

Developing Trend: West-Central Alberta

As explained earlier, a great deal of co-operative work has been done on critical sour wells by industry, government, and the public, with the objective of making these wells safer and more environmentally acceptable. At the same time, there is a developing trend in west-central Alberta where the results of this work may prove useful to industry and reassuring to the public. Beginning with Shell Canada's application for an experimental sour gas processing facility near Bearberry, continuing west through Caroline (where considerable sour well drilling already has occurred), to Panther River (where sour gas development is being considered), and south along the foothills, there are clear indications of major sour gas reserves. The intense work being done now to make sour well drilling safer, both environmentally and for human health, will return major public safety dividends as these developments continue.

Expanded Air Monitoring Capability

As part of its overall environmental responsibilities, the ERCB took delivery of a mobile air-monitoring vehicle during the spring of 1986, replacing an outdated unit the ERCB has used since 1975. ERCB Environment Protection staff now are using the new 4-wheel drive, specially-equipped vehicle to respond to odour complaints received from citizens living near oil and gas projects. This monitoring unit is able to measure concentrations of sulphur dioxide, hydrogen sulphide, and total sulphates, from as low as a few parts per billion, to as high as 50 parts per million. In the event of a sour well blowout, this mobile unit would be dispatched immediately to the area to assist corporate and government air-monitoring units.

An important factor in Alberta's overall emergency response planning is an ERCB policy which would require ignition of any critical sour well that is blowing out of control near an urban centre or other large concentration of population. Setting the gas flow on fire converts the hydrogen sulphide to sulphur dioxide, eliminating the most serious risk of the blowout. Upon request of the operator, the ERCB may postpone ignition if it appears that control measures can be effected in a short time, but only if sensitive monitoring equipment indicates that the resulting hydrogen sulphide levels will pose no risk to human health.

ERCB and People

...serving the people of Alberta for almost 50 years

Introduction

This special section of Energy Alberta has been designed so that it may be separated from the full report, and then reprinted and distributed to those Albertans who ask about the ERCB when they find themselves confronted by major energy developments.

What Does the ERCB Do?

To understand what a complicated organization such as the ERCB is all about, one needs first to understand what the organization believes it is doing. Here is the ERCB's statement of its mission — its purpose as the regulator of Alberta's energy industry:

"The ERCB facilitates and regulates the responsible development and careful conservation of Alberta's energy resources. In so doing, the ERCB attempts to bring fairness, and a sense of balance to the conflicting needs, concerns, and perceptions of the people of Alberta, their government, and the energy industry."

In this section the reader will find

- examples of the kinds of work the ERCB is doing in its service to Albertans;
- an explanation of how the ERCB carefully examines energy development applications, and of the requirements the industry must satisfy before it can gain approval to develop energy resources;
- an explanation of how the ERCB public hearing process works, telling the story from the point of view of an intervener at an ERCB hearing;
- an opportunity to share a day in the life of an ERCB field inspector, as he carries out the regulatory side of the ERCB's mission.

A Tough Year!
...for the Energy Industry, and for Albertans

1986 was a year of setbacks for many of Alberta's energy sectors. Cash flow to the industry was cut dramatically, prompting a major review of activity both in the short and longer terms. And yet, in some regions considerable energy activity continued. Drilling for oil and gas was quite extensive in areas such as Caroline and Red Earth. Completion of crude bitumen projects, which were started before 1986, took place near Cold Lake and in the Peace River region. And, already-approved projects and new applications continued to be evaluated and monitored by the ERCB. Albertans, meanwhile, continued to question, to challenge, to criticize, and sometimes to praise the energy industry and its regulator, the ERCB.

Throughout the year, industry, governments, and many Albertans, had difficult decisions to make. With reduced energy industry revenues came business retrenchment, staff reductions and increased unemployment. Further energy development was urged and sought, but also decried and fought, proving once again that the level of people's concerns regarding energy developments is not necessarily directly related to personal prosperity, or lack of it. Shell Canada's application to drill a sour gas well in southwest Alberta was seen as a threat to the environment and to wildlife. Hewitt Oil's small gas plant southwest of Edmonton was seen as a potential polluter of the atmosphere and as a threat to property values. Diamond Shamrock's application to drill under Pigeon Lake was viewed as threatening a special recreational area. Construction of Edmonton Power's Genesee generating plant was opposed by many on the grounds of unnecessary cost to the consumer.

In its service to Albertans, the ERCB must ensure that energy developments meet and maintain the highest practical standards of conservation and environmental and public safety. It must seek to balance the various interests held in particular pieces of land. It must facilitate development of energy resources and, at the same time, assist in protecting the environment for both present and future generations. The ideal, obviously, is that all these interests will coexist to the mutual benefit of all. Unfortunately, the road to coexistence is not always smooth!

Without question, the development of Alberta's energy resources will continue and expand in the future. The ERCB will continue to monitor and regulate in the broad public interest. However, many difficult decisions still will have to be made. Albertans basically recognize that the energy industry brings with it significant benefits; that it supports a high standard of living in the province. But, they also perceive that the industry sometimes brings disruption to long-standing lifestyles, perhaps even some risk to the environment and to human health. A careful balancing of these opposing views will continue to be a major ERCB responsibility.

Working with People

Those Albertans who are directly involved in the energy industry have long been familiar with the ERCB. In recent years, however, more and more people from the broader walks of life also have become familiar with the work of the ERCB.

Most frequently the ERCB comes to the attention of the Alberta public through its advertising of specific applications, through the normal reporting functions of the media, or through direct dealings with companies promoting specific projects. Public attention is most intense when the ERCB is dealing with very controversial applications, or with accidents that have occurred at energy facilities. Much less attention is paid to ERCB's extensive efforts to listen to and inform Albertans on a variety of energy development issues.

There are many ways in which the ERCB works with the public. Most are routine and typical – not too surprising to any reasonably informed citizen. Others are quite unusual and require considerable extra effort by the public, by ERCB, and by industry. For the ERCB, such work requires a recognition of people's rightful role in energy decision-making, and of ways for ensuring that relevant and useful information flows between all parties affected by specific energy projects.

This special report describes a series of communication efforts which the ERCB undertook during the past 2 years to ensure that the concerns of Albertans were being heard and responded to in ways that made sense to them.

INFORMATION: making the parties equal

On a regular basis, ERCB staff provide information respecting energy standards, controls, and the regulatory process, to residents and interest group representatives living or working in specific project areas. In this manner, affected citizens – and particularly any potential hearing interveners – are provided with professional, authoritative and understandable information to assist them in dealing with particular applications. This information is provided by the ERCB independent of information provided by project applicants. In 1986, ERCB staff attended more than 100 community meetings to answer the questions of Albertans affected by particular energy developments.

PRE-HEARING MEETINGS: focusing the issues

Some energy applications, because of legislated requirements, size and complexity, or potential for environmental or social impacts, are seen by the ERCB to require a public hearing. In addition to its regular practice of providing relevant information to all of the parties to such an application, the ERCB may also call a pre-hearing meeting to explain hearing procedures and to identify, and perhaps focus, the issues to be discussed during the hearing. In 1986, the ERCB sponsored 30 such pre-hearing meetings.

PUBLIC HEARINGS: ensuring fair play

While not always viewed as a vehicle for effective two-way communication, ERCB's public hearings do provide an important opportunity for differing points of view to be aired in an orderly fashion. ERCB hearings especially allow for an open public testing of technical, environmental, social and economic evidence from any registered party, with the accompanying assurance that all relevant arguments, for and against, will be considered. Each ERCB hearing results in a publicly available decision report summarizing the views of all parties, and explaining the Board's final decision. These reports become part of the extensive literature available to companies and citizens as they prepare for future developments. ERCB issued 50 decision reports in 1986.

Occasionally, the Board will also inquire into critical issues, or especially significant energy-related accidents (such as the Lodgepole Blowout), in order to provide the public with a full report. These special inquiries provide opportunity for the presentation and expert assessment of a wide variety of important information. ERCB staff then provide the public, government, and industry, with the resulting findings in order that what has been learned will become part of general public awareness of particular resource or development issues.

A NEW FIELD: mediation and negotiation

In recent years, the ERCB has sought to bring about conflict resolution between people and companies early in the development of sensitive energy projects. It has encouraged the various participants to share their concerns with each other, in the hope they will resolve issues, create good will and understanding, and possibly avoid serious confrontations during public hearings. Such innovations have sometimes generated viable alternatives to the public hearing process. On occasion they have allowed proponents and affected residents to come to mutually agreed-upon resolutions to highly contentious issues.

One 1986 example involved Hewitt Oil and the Golden Spike community, just west of Edmonton. In this case, the focus was on Hewitt's application to build a small gas plant to process slightly sour natural gas that previously had been processed by another company in the same area. While neither the applicant nor the affected citizens realized what might be accomplished through negotiation, until after the required hearing had taken place and the plant had been approved, their subsequent work together has established new Alberta parameters for successful company/citizen involvement.

PROBLEM SOLVING: working teams breaking new ground

Notwithstanding the best intentions of all parties, some communities continue to have long-standing unresolved issues connected to resource development. Sometimes these issues involve several companies and a number of government departments. In such cases entirely new communication structures may be needed. The ERCB has supported the development of such structures to reduce conflict and to address the concerns which underlie it. One such case involved the development, beginning in late 1985, of what became known as the Interface Committee, serving the Native community of Fort McKay in its relationships with oil sands developers, Syncrude and Suncor. The Fort McKay Interface Committee has met 10 times since its inception. It has directly resolved a range of troublesome issues, including a new water treatment and supply system for the community, formation of the Syncrude Application Review Committee (with Native representatives fully participating in the reviews), and environmental education on several fronts, including young Native people being trained to read and interpret the output of sensitive air monitoring equipment installed in the community.

ALBERTA'S MEDIA: a vital link to the people

A well-informed media can lead to a much better informed public. To play this important role, however, the media need regular channels of contact and a co-operative source of authoritative information. The ERCB is favourably known by the Alberta media on both counts. During 1986, the ERCB held more than 100 specially-arranged private interviews and press conferences, and distributed more than 300 special packages of information, including 200 on sour gas alone. Additionally, the ERCB's Information Services Section, and its Library, are favorite haunts for reporters doing research into energy stories.

INFORMATION SHARING: special community arrangements

Certain areas of Alberta are the focus of intense energy developments. In some instances, several companies may be operating in the same area at any given time. Sometimes it is difficult for residents to get the information they need in order to fully understand what is happening, or to gain access to the right people in order to have their concerns properly addressed. The ERCB seeks to facilitate the establishment of new information structures to meet these specialized needs. One of its more recent experiments was sponsorship of an energy information centre as part of the new public library in Elk Point.

COMMUNITY-FOCUSED ISSUES: research builds knowledge

Particular energy developments can sometimes raise the issue of insufficient information on which to base acceptance or rejection of an application. The ERCB encourages, and occasionally finances, independent research to address such matters. The need for this kind of research generally evolves out of citizen/company interactions. When the research has been completed it becomes part of the growing library of material available to assist in assessing future energy applications. Two important examples of the kinds of research encouraged by the ERCB are the Twin Butte Medical Diagnostic Review, and the risk assessment studies presently being carried out by Concord Scientific Corporation in connection with the Canadian Occidental application to drill sour gas wells on the northeast boundary of Calgary.

ESSENTIAL FOUNDATION: concern for people

The ERCB believes that the foundation of valued service is its strongly held concern for all Albertans. For nearly 50 years, faced with unparrelled development of Alberta's energy resources, the ERCB has tried never to lose sight of the people it serves.

ERCB and the Information Age

According to experts who study long-term trends, recorded knowledge soon will be growing four times faster than the human population. Indeed, crystal ball gazers now see the current generation as the beginning of the Information Age.

Access to information is also a contemporary issue. In the midst of growing skepticism about "experts", people now want to be able to interpret facts for themselves.

There are widely differing views on what type of information access policy best serves the public interest. This is true of energy information too. While some people believe that all energy information should be kept confidential – to be used to the owner's sole advantage – the ERCB subscribes to the view that making energy resource data available at an early stage means better decisions by everyone involved in resource development. Access to high-quality information allows large and small companies to compete on more equal terms, to avoid past mistakes and, ultimately, to produce energy in the most orderly, safe, and efficient way possible.

As a result, the ERCB has more databases, and more information-gathering capacity than most private companies or government departments in Alberta. The ERCB believes Albertans want this type of system – that it is in the broad public interest.

ERCB's information "family" is a closely knit, but extended one. Whether you are a petroleum engineer, or a member of an environmental group seeking information about an energy project, you may wish to start with the ERCB Library, which had nearly 16 000 requests for service in 1986. Although the ERCB library was established 30 years ago, largely to serve in-house needs, today 32 per cent of its users come from outside the organization. The Library's ERCB connection is strongly reflected in its collections of ERCB documents, statistical reports, technical manuals, and energy-related periodicals. If you cannot find what you need, librarians will direct you to the more specialized ERCB print materials available in the Maps and Publications section, and to the primary data stored in the ERCB Records Centre.

As its name implies, Maps and Publications keeps an inventory of virtually all ERCB publications. This material ranges from ERCB decision reports, to regulations governing pipeline construction; from guidelines on how to apply for an energy project, to maps showing the location of most energy facilities in the province.

Those with an even more technical bent may find benefit in a visit to the ERCB Records Centre. Stored here are the raw facts on practically every energy facility in the province, free of interpretation or analysis. The Records Centre keeps track of the complete history of every hydrocarbon well drilled in Alberta, from daily drilling "tour" reports, to the progress of enhanced oil recovery schemes. This information is available in hard copy, on microfiche, from an ERCB computer terminal, or you may purchase much of the material on computer tape, to use back in your own office.

The ERCB's Core Research Centre is the big brother of the ERCB information "family". This centre houses 7.5 million vials of drill cuttings, and more than 1000 kilometres of core (cylindrical samples of rock, taken from a wellbore for geological analysis). The ERCB completed an expansion of this storage and research facility in 1983, designed to meet the needs of the energy industry well into the next century. Built on land in Calgary's University Research Park, the centre is the most comprehensive inventory of core and drill cuttings in the world.

For geologists, the Core Research Centre represents a priceless scientific resource. Companies are more confident about drilling a successful well because of the core research work they do at the centre. Company researchers examine core from their own wells, and from those of their competitors, to develop detailed underground "maps" to determine where the most favourable petroleum reservoirs are to be found.

In the final analysis, though, it is the people of Alberta who benefit most from ERCB's state-of-the-art information systems. Core research promotes resource exploration which, in turn, creates employment and revenues. Information allows imagination and initiative to be applied to new projects. And, access to information helps maintain balance among the often conflicting interests involved in the development of Alberta's energy resources.

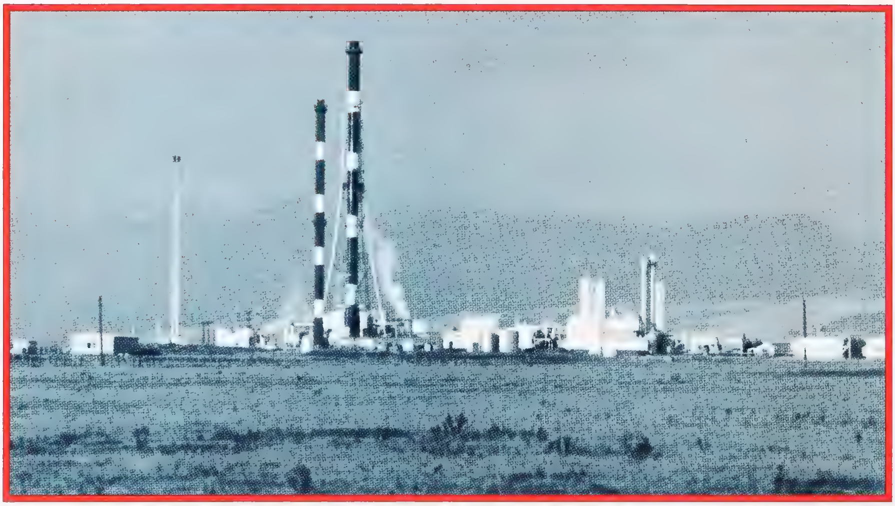
ALBERTA'S ENERGY APPLICATION PROCESS ...NOT JUST A RUBBER STAMP!

A sour gas plant application is used here as an example. Many of the same principles apply no matter what type of energy application is being considered.

Because most people know very little about the process which Alberta energy companies must follow when developing energy resources, all too often things like sour gas plants seem suddenly to spring out of nowhere. Frequently, it may also appear as though a company representative simply went by some government office and had a heavy bureaucratic hand rubber-stamp a project description written on two thin sheets of paper.

Not so! Far from being a rubber-stamp process, the Alberta energy application review system is known, internationally, to be one of the most detailed and difficult anywhere.

Any company receiving approval to build and operate an energy facility in this province already has gone through an intensive review of what it hopes to do, how it plans on doing it, and of the skills and reputation it is bringing to the project. This review process is led by the ERCB, but may include a number of government departments, particularly Alberta Environment, which wants to be certain that any proposed facilities meet its strict standards designed to protect both people and the environment.



A sour gas plant is clearly in the category watched carefully by the ERCB and Alberta Environment. Gaining approval to build a sour gas facility never is easy and sometimes can be very difficult, expensive and time-consuming. Gaining fairly fast approval for a sour gas facility can only occur if the company has met all ERCB and Alberta Environment regulations, and citizens living near the proposed plant have not objected to it. The same approval process can take many months if there are public objections to the facility, or if the company has failed to follow the rules of the game and has turned in a deficient application. (These rules are clearly explained in ERCB's application guides.)

Additionally, the Minister of the Environment has the mandate to order an Environmental Impact Assessment (EIA) for any proposed sour gas facility. This decision usually is made long before an application is filed with the ERCB. However, the fact remains that an EIA, alone, adds time to the total application review process.

The ERCB has the authority to refuse to consider a gas plant application if it clearly does not meet the requirements of the ERCB's Oil and Gas Conservation Regulations. In such cases, more months may go by before the application is finally ready to be examined by ERCB technical staff. In the majority of cases, company engineers and planners are well aware of both the ERCB and Alberta Environment regulations. They try to ensure that gas plant applications meet all regulatory requirements going in. However, if ERCB staff find technical or regulatory deficiencies, the application is set aside until the company responds to those deficiencies.

Even after an application has successfully negotiated all of the ERCB and Alberta Environment regulatory "hoops" the process isn't over! The public must be properly informed by the applicant. The Energy Resources Conservation Act — the Act governing the ERCB in its dealings with industry and the public — states that when it appears to the ERCB that its decision may "directly and adversely affect" people living near a proposed project, a public hearing may be called. Under the Act, the ERCB must advertise the application in appropriate newspapers at least 10 days in advance, and must contact all directly-affected landowners by mail, to ensure that all affected parties know of the application and of the proposed hearing date.

ERCB public hearings typically require only 1 or 2 days to complete. However, in exceptionally controversial situations public hearings can take weeks. When the hearing is completed, the ERCB issues a written decision report — also a time-consuming process. If the ERCB is satisfied that the technical design and environmental aspects of the project are sound, and that approval is in the broad public interest, an approval will be issued. Frequently, however, special construction and operating conditions may be imposed on the applicant, to address concerns raised by people during the hearing. Furthermore, municipal-level governments must also be satisfied, at this point, that the facility meets local land-use criteria.

When plant construction has been completed the company must again apply to the ERCB and Alberta Environment, this time for a licence to operate. At this stage the application is reviewed to ensure that the project continues to comply with Alberta Environment's Clean Air and Clean Water Acts, and ERCB's Oil and Gas Conservation Act and Regulations. Only when both the ERCB and Alberta Environment are fully satisfied that the project design has met all regulatory requirements will the company be allowed to begin operating the plant.

Additionally, the company cannot alter the approved operations at the plant, in any substantial manner, without again applying to the ERCB for approval. Nor can they abandon the plant without ERCB and Alberta Environment approval. This final safeguard ensures the site will be reclaimed to standards set by Alberta Environment.

Clearly, the Alberta application review process is not a mechanism for "rubber stamping" energy developments. Rather, it is recognized to be one of the toughest systems in North America, and one designed to meet the needs of citizens, government, and industry.

On Being an Intervener at an ERCB Public Hearing

The ERCB public hearing process has been described as "quasi-judicial" and "semi-formal". For those who appear at such hearings on a regular basis – lawyers, ERCB staff, company witnesses – it's all part of a day's work. But what is it like for the intervener – for the landowner who opposes an energy development and may attend only one hearing in a lifetime? Simone Marler, a member of the ERCB's Communications Group, talked with several interveners. This is what they said the hearing process is like from their perspective.

It's 8:45 in the morning, just 15 minutes until this ERCB public hearing is supposed to begin. Inside the town hall people are gathering in small groups. The company people have their heads together in front of open briefcases. A few neighbours greet each other and talk about the weather. I keep checking the clock.

A lady in a neat blue suit is setting up a machine that looks like a cross between a small typewriter and an old-fashioned adding machine. She must be the court reporter. She will record every single word, I've been told. A man is testing microphones.

Our town hall looks unfamiliar, nothing like the set-up we use for weddings, or even for a community meeting. Across the front of the room is a table with three empty chairs facing the audience. At right angles to this "head table" are two longer tables facing each other, one on either side of the room. The company representatives seat themselves at one table, the ERCB staff at the other. I've met some of these people before. We shake hands (mine are sweaty; always happens when I'm nervous). Facing the "head table" is the table where I'll be sitting until it's time to make my presentation. I am an intervener. I'm just not convinced that I want an oil well near our home.

My husband is with me for moral support. Because he hates speaking in public, I've been "volunteered", he wisecracks to a friend.

At exactly 9 o'clock everybody settles down. A few people rise as three ERCB panel members enter the room and sit down at the head table. (I didn't know we were supposed to stand, just like in court.) Then the man in the middle smiles, and suddenly it's for real!

"Good morning, ladies and gentlemen." (He has a pleasant voice.) "The Board has for consideration at this hearing, Application No. 1234, made pursuant to the Oil and Gas Conservation Act, by XYZ Canada Limited, for the purpose of drilling an oil well. Before we get underway, I would like to take a few moments to explain to you how the ERCB's hearing process works so that, hopefully, you will feel more comfortable this morning." (Good luck, I mumble to myself.) He explains that although this is a semi-judicial procedure, unlike a court of law, witnesses (that's me) aren't sworn in. ("Although I expect you to tell the truth anyway", he says. Laughter all 'round.) He makes several good points, then asks if we have questions. I hope my husband is paying attention. By now my stomach is in such knots!

The Applicant Goes First

After a few opening remarks, the company begins its presentation. I concentrate hard on what they are saying. I have read their application. I had to ask my daughter's geologist friend to explain their funny-looking maps. But now I am beginning to understand what their "geological data" is telling them – that there is a good chance of finding oil 2000 metres down, right underneath the land our family settled, and has farmed and enjoyed for three generations.

The company lawyer explains how his client purchased the minerals from the Crown. (It's difficult to think of oil as a mineral, like gold.) We may own the land on top, but the minerals belong to the province. He reminds us that when the government leases these rights, the company is entitled to "win the minerals". (Is he saying I can't really prevent it?)

Not only is there a good chance of finding oil, they argue, but the company also is sure there is money to be made in this venture. Even if the price of oil is low right now, Alberta's conventional oil production is declining. Somebody's going to want this oil sometime.

They make a point of explaining how this application meets all the safety requirements set out by the ERCB, and that it will result in minimal impact to our land. That's the part I have trouble with!

The company lawyer sits down. (My husband and I had decided to represent ourselves; that we didn't need a lawyer. Now, I'm not so sure we did the right thing.) The man in the middle thanks the company for their presentation. Then, suddenly, I hear my name coming over the p.a. system. "Mrs. Smith, you will have an opportunity to make a statement later but, at this time, do you have any questions for the applicant?" I nod, rise, and walk to the podium. I grip the edge to steady myself.

"Yes", I say – out loud this time – "I do have a few questions." I glance down at my notes and confidence starts to come. It comes from knowing this is the right thing to do to protect our way of life.

"In the written description for this project you state that the well will cause minimal impact. Did you consider that the proposed access road to the well will cut right across our barley crop? Did you think of the extra work involved in ploughing around the well site and the road?"

I listen to their explanation; then I ask a few more questions.

"What is the size of the site? When will drilling begin and end? If you are successful and find oil, what else can we expect? More wells? A pipeline? Trucks every day? How noisy will this operation be?

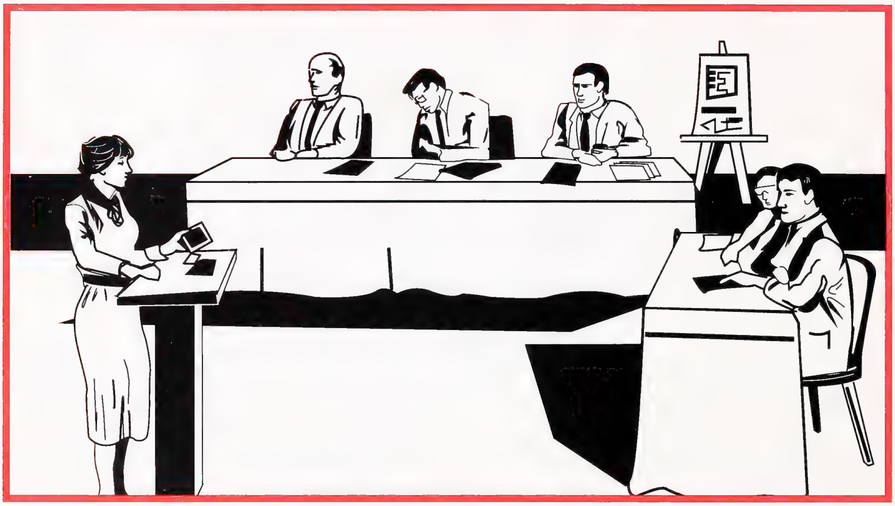
And, my clincher, – "Why are you absolutely set on this location?"

They reply with an involved explanation about spacing requirements, geological trends, pinch-outs, and production penalties for being outside target zones. I don't understand much of what they're saying, but I'm on a roll!

"Your survey plan doesn't show that this well site will be in plain view of our home. If you moved it 100 metres farther north, trees would block the view and muffle the sound. And what about trees? Will the drilling contractor be careful to leave as many as possible? This plan shows the drilling location is in a marshy area. Can you guarantee that the drilling fluids will not cause environmental damage? Moving the well could mean less of a problem there, too." (Good heavens, what am I saying? It sounds like I want this well.)

I finish by saying it doesn't seem to be "minimal impact" to me. I hope I have made my point with the ERCB people.

Then it's the ERCB staff's turn to ask questions. They ask the company about geological data, about target zones, and about alternate locations too. The ERCB panel follows with a few questions.



Now It's My Turn

Now it's my turn to make a presentation. This part is harder than asking questions. It's my show now, my one shot at making the points I think are really important. I begin to have second thoughts. Is it really worth all the trouble? Maybe I should have just let them go ahead and drill the well.

I found out early that you have to be "directly and adversely affected" by a proposed development to ask for a hearing. Usually the ERCB takes that to mean someone who owns or occupies the land where the well will be drilled. However, they can expand the meaning to include people living nearby, in the case of a sour gas well, for example.

"Mrs. Smith, would you proceed with your intervention?", asks the man in the middle. "I have your submission. We will label it Exhibit 5."

An exhibit? Sounds like something straight out of *Perry Mason*. Makes me feel guilty just being here. But, I shouldn't feel that way! I have learned a lot about my rights since this whole thing began.

It started with a seismic crew last summer. We see seismic crews fairly often in our area, but that doesn't necessarily mean drilling rigs will follow. In fact, I figured if we hadn't had a well yet, we had a pretty good chance of never having one. So, I didn't give it much thought until the surveyor knocked on my door to ask if it was alright to lay out a survey for company XYZ. I said o.k., but then I started to worry.

The company landman came out a few weeks later to tell us that they wanted to drill an oil well on the farm. I felt sad – and a bit angry.

That was the first of several meetings. We couldn't seem to get an agreement. They offered more money, but I kept saying that wasn't the problem. With the survey complete, and their geological data in place, they wouldn't budge.

That was when I first wrote a letter to the ERCB objecting to the proposed well site. I didn't know much about the ERCB then, much less about its public hearing process. One of my neighbours told me that the ERCB is the government agency that says "Yea" or "Nay" to energy applications. Well, I found out they hardly ever say, "Nay"! (However, they often put conditions on energy projects that weren't there at the start.) Also, they will go to great lengths to make sure people like us get a chance to present our concerns.

Most wells drilled in Alberta, I discovered, are routine. There are tens of thousands of them. Nobody objects. They don't have to. The oil business has been around for a long time. The money paid by oil companies is a big help to many farm families. Because landowners and oil companies get along like up/down neighbours, the ERCB keeps an eye on them, making sure they do what they say they're going to do, that they obey the rules. I guess I just did not want the oil company for a neighbour; at least, not where they proposed to "live".

The ERCB people asked us to try once more. We did, but to no avail. Soon, a notice of hearing appeared in the mail. There it was, clear as day. I was supposed to "make a written submission". Gulp! That might take a bit of money, probably a lot of time, likely some talent.

The money part turned out to be the least of my worries. As a "local intervener" I could claim the costs of things like long-distance telephone calls, collecting evidence, writing and producing my submission, and even paying for some technical assistance. The ERCB decides who qualifies for intervener funding, and for how much, but they certainly treated us fairly.

Writing a Submission is Difficult Work

Writing the submission was difficult. After a couple of weeks' hard work, many evenings studying the company's application, and the ERCB's *Guide for Interveners*, I sent my submission to the ERCB. I put my heart and soul into that document. And, though it was tough for me to do, I did suggest a possible alternative.

Now I am in the hearing, and it is my turn to explain my point of view. I've rehearsed the words in front of a mirror at least a dozen times. My voice seems to be more convincing than I had thought possible.

My argument is simple enough. I don't want this thing! But, if I have to, then how about moving it farther north? Away from where we can see it. Bring the access road in from a nearer side road. (And, while you're at it, put a good solid gate on that road.) Try not to mess up our marsh. In fact, I'd feel a lot better if you just trucked your drilling fluids somewhere else to dump them. I show my pictures. I invite the whole group to walk around our place, to see for themselves.

I glance at the clock. Twenty minutes have vanished. I finish my presentation and sit down. The Chairman thanks me. The questions from the company, the ERCB staff, and the panel – well, they're tough. But I just concentrate on my main ideas. I sense that the company might be willing to change their plan. We adjourn for lunch.

At 1:30 in the afternoon the hearing reconvenes. To my surprise, the Chairman asks if the key people are willing to take a drive out to our farm. (Wow, you mean they'll actually do that sort of thing!) As we walk through the fields, our situation seems more hopeful.

By 4 o'clock we're back at the hall. The company engineer asks the ERCB to amend the application, moving the location just slightly north. We pore over the maps and study the contours of the land. "It looks alright", I say. "I think we can live with that."

The summary statements are short. The company suggests they should be allowed to go ahead with the changes. They will submit a new survey. The hearing adjourns.

Did We Win or Lose?

Did we win or lose? That's not an easy question. Four weeks later the Decision Report arrives in the mail. The new location – the one we fought for – is clearly indicated, and so is the added condition that, "because of the unconsolidated soil in the marsh", the company must use a remote site for dumping drilling fluids. The road stays almost the same. I understand what the decision says, but I wish someone had taken the trouble to come out here and talk about it.

I'm not certain we came out of the experience any better off. It took a great deal of time and effort. Of course, the money for the well site will come in handy, but we'll also have to live with this thing for years. I suppose, too, that I really did influence what the company intended to do. I feel good about that. And, I learned more about how the application review system works. It seems fair. The ERCB did take the time to listen. The process isn't perfect, I guess, but it's better than I thought it would be. And, eventually you even get over the stage fright!

"It's Lonely Out There!" ...A Day with an ERCB Field Inspector

Jack Bales serves as communications advisor to the ERCB. In March of 1987 he invested a day with an ERCB field inspector to learn what that little-known group does in service to Albertans. Here's his report.

They live a lonely life at times — the field inspectors of the ERCB. I don't mean they are always alone. Rather, I'm suggesting they must feel lonely a great deal of the time.

Despite the fact that industry's top executives mostly say the cosmetic thing, that is, "We prefer a strong regulator", many of the drilling crews and plant operators wouldn't miss ERCB's inspectors if they never came around again. And often, they're not afraid to say so!

After considerable reflection about my day in the oil patch, it seems to me that an ERCB field inspector's job is much like that of an infantryman ordered out on point. Plenty of talent and equipment backing him up, of course, and very good reasons for being there. Also, he's well trained for what he's doing. But, like it or not, the focus of the hour comes down to that one lonely job. Likewise, if there's trouble in the oil patch, it will likely be out here — with one ERCB field inspector and one angry landowner, or one frustrated well driller trying to meet a very tough deadline set by a three-piece suit back in Calgary.

An Expert Dealing with Experts

Because I am new both to the energy business, and to the ERCB, I had asked if I could invest a day with an ERCB field inspector — to learn what they do.

"Sure!", said the Area Office Supervisor, "But, you go wherever he goes, you stay out as long as he needs to, and you don't ever interfere with his work, no matter your opinion of what is happening."

Several things became clear almost from the outset. To be an ERCB field inspector you have to be a very good driver. Alberta's back-country roads are well nigh impassable at times. You need to be able to see through a cracked windshield (almost all ERCB's field vehicles have them; the natural outcome of flying rocks). Oh yes, and you must be able to stand the cold. Long hours of it. With wet snow and mud thrown in for good measure.

Next comes the business of knowing your business — and knowing it well enough to debate regulations and procedures with the expert responsible for whatever facility you're inspecting.

An ERCB inspector must be well informed about the powers given him by the statutes under which ERCB operates, and carefully diplomatic in his use of those powers.

And, he has to have the patience of Job! A lady agrees to meet with him regarding an unusual hydrocarbon odour on the farm. However, after driving 90 kilometres, he finds she has departed for another appointment. He grumbles his way to the next farm, only to discover that word of a bonspiel got there before he did and everybody's in town.

People Concerns Come First

While careening along a slippery road, my host explains the priority list he used to plan the day's work. "We take a look at the things to be done and then list them in the following order: first, public complaints. (These can come from anywhere and anyone.) Then, critical sour wells. We try to inspect each critical well at least three times during the drilling, and definitely as they approach the critical zone. Next we check servicing or operating gas wells, and finally, any other drilling rigs working in the area. Also, we inspect operating facilities, such as sour gas plants and oil field batteries, on a regular schedule.

"One of our best working tools is the two-way communication system we have in our vehicles. For example, if I spot something unusual involving a pipeline, I can get on the 'phone to home base immediately and talk with the pipeline expert. Then, he can take whatever action he thinks necessary.

"One of the really satisfying things about this job is that they put you through a really comprehensive training program, then assign you to a territory and it quickly becomes almost like your own company. The ERCB trusts me to do what is right, both for the people living in this area, and for the energy companies working here. If I need other kinds of expertise I can call my office, or Head Office in Calgary. But, basically they leave me on my own to do the job."

To his disgust, a planned service rig inspection craters (so did the bottom of the car on what passes for a lease road) because this particular crew isn't making the progress it planned on. He settles for a walk around, then schedules another inspection at a later date.

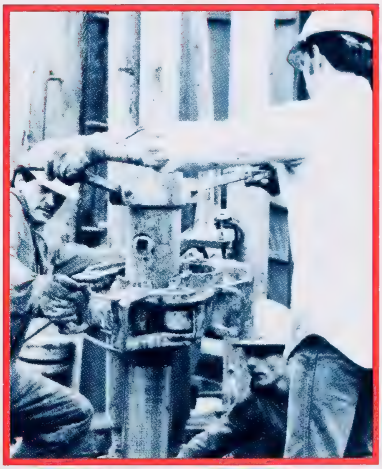
“This Crew is Good!”

We move on, this time to a drilling rig in a field just north of the road we’re on. They are drilling for sour gas. “They’ll be in the critical zone soon”, my host shouts over the roar of the diesels, after checking with the rig manager.

He begins by showing me how he tests for noise levels, although it really isn’t necessary this far from people, unless someone has complained. “They’re okay, ’way out here. But, they’d never meet the noise standard close to a town or a house. I’d have to order them to install heavier mufflers.”

Next, he runs the rig through a full inspection. Takes him more than an hour. I notice he’s made two notes on his pad. “Neither one is serious”, he says. “This is the kind of drilling operation that does good things for the industry’s reputation.”

After explaining what he has found to the rig manager, he next requests a surprise BOP drill. This exercise is designed to find out how fast, and how skillfully this particular crew can close in the well should a kick alarm sound. (That’s the first indication of a potential well control problem!) “They’re good!”, he says later, with obvious satisfaction. “Twenty-two seconds, alarm to shut-in — they really know their stuff!”



"One Out of Hundreds"

His wish to show me how drilling and servicing rigs differ led us down a number of dead ends. But finally, in the late afternoon, he spotted a flag over a hill. You couldn't see the rig from the road. We slithered our way down what could have passed for a creek bed, but actually was a lease road, and then got more of the same when we left the car and hunkered through wet snow to the well site.

Even to my untrained eye, the rig and the well site didn't look very well organized. They weren't! Nine violations later – six of them in the serious category – my host wondered aloud, "Why, out of the hundreds of good service rig inspections we do every year, did I have to bring you to this one? This is very unusual." He pondered shutting the rig down, but before doing that he thought he'd call home base – "for a second opinion" as he put it.

Then it was back to the car, and on the two-way radio to home base, where he was patched through to another ERCB staff member at dinner (most sensible people being home with their families by that time). He explained the situation.

An anonymous voice came back, "Have they perforated yet?" That's when I learned why perforating is so important. Once the crew blows those holes in the wellbore, you're going to get whatever is down there coming to the surface. And, you'd better be able to control it.

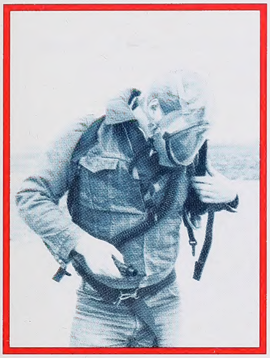
The reply, of course, was "No, they haven't perforated."

"Then the well was not in an unsafe condition. We can't say they wouldn't have corrected the errors before perforating.

"Tell them to carry on running tubing, but that well must not be perforated until all equipment has been brought up to standard – and we will want to do a complete inspection before they perforate."

Understand now, that word led to more than 2 hours of sloshing through 3-inch deep mud, while my host and the crew reworked most of the BOP equipment on the rig. No one was happy! And yet, this is what ERCB's field operations are all about. Most of industry plays by the rules. A very few either don't know, or don't care. Of the hundreds of ERCB service rig inspections last year, less than 14 per cent were unsatisfactory. "This is very unusual," reaffirmed my host. "Normally, these rigs are in much better shape. However, you can bet this one won't be in this condition again in the near future, because we'll be talking to both operator and contractor management people."

Fifty Years of Good Work



It is people such as this ERCB inspector – supported by the very strong mandate of the ERCB, and with back-up expertise in eight Field Offices, and in the Calgary Head Office – that help make Alberta's oil patch one of the safest in the world.

There are more than 100 field inspectors working for the ERCB. In their heads they carry a storehouse of energy regulation and technical information. On any given day of the year, they'll turn up without warning at several hundred energy facilities in this province. Most of the time they'll just get bounced around on some very rough roads. They'll get wet and muddy, and occasionally they'll be required to take risks in the presence of sour gas. (They're equipped with air paks and a car full of useful, sometimes exotic equipment.) But, every so often they'll find trouble in the making, and correct it, like happened today.

"In this job, you have to believe in yourself, in what you know, and in the strength of the organization standing behind you", explained my host, as we headed for home base. "You must make certain you are right before you order anything done, and you must only do those things that will make the total picture better for everyone – not just for the sake of having done something. In my experience, you can't do this job if industry is constantly fighting you, so fairness is essential.

"On the whole, I've found that industry respects the job we are doing, just as we respect what they are doing," he concluded.

For nearly 50 years the ERCB has employed inspectors in Alberta's oil patch. The job of field inspector always has been tough. But, it's a job that must be done, and there's no doubt at all– at least, not in my mind – that Albertans have benefited significantly from the work of ERCB's field inspectors.

Change at the ERCB

The ERCB, with its 750 employees, is headed by five professionally-qualified Board Members appointed by the Alberta Cabinet. As we go to press, the Board and its senior management team are experiencing significant changes.

As 1987 began, Vern Millard retired as Board Chairman, after 9 years in that position, and 37 years of service with the ERCB. The appointment of Gerry DeSorcy as incoming Chairman was announced at that time. (Mr. DeSorcy, too, had worked for ERCB more than three decades, most recently as its Vice Chairman.) Shortly thereafter, two other Board Members, Vic Bohme and Lloyd Bellows retired, both with more than 30 years service. Frank Mink, formerly the ERCB's Manager of Economics, was appointed to the Board in January 1987, and Board Member, Norm Strom, replaced Mr. DeSorcy as Vice Chairman, after a 30-year association with the ERCB. Chris Goodman, who served with industry 16 years before joining the ERCB in 1971, continued as a Board Member. The most recent senior appointment occurred in April 1987, when Dr. Philip Prince, a private sector petroleum consultant and one-time senior energy economist with the Royal Bank of Canada, was named a Board Member.

Many retirements from ERCB's management levels have also occurred recently, largely as a result of ERCB's participation in the Alberta Government's Early Retirement Incentive Program. These management changes are shown in italics below.

ERCB Senior Management

Board Members

G. J. DeSorcy	Chairman
N. A. Strom	Vice Chairman
C. J. Goodman	
F. J. Mink	
J. P. Prince	

Senior Advisors

G. A. Warne	Technical Assistant to the Board
J. K. Bales	Communications Advisor

Managers

R. T. Bording	Accounting	*J. D. Dilay*	Gas
K. G. Sharp	Administrative Services	*C. A. Langlo*	Geology
R. G. Paterson	Coal	T. F. Homeniuk	Hydro & Electric
H. Antonio	Data Processing	M. J. Bruni	Legal
E. J. Morin	Development	*N. G. Berndtsson*	Oil
J. W. Newton	Economics	R. G. Evans	Oil Sands
R. F. Braun	Employee Relations	E. G. Fox	Pipeline
E. R. Brushett	Environment Protection		

Additional information on the ERCB and its activities can be obtained from:

1. Information Services — 403-297-8190.
2. ERCB Library — 403-297-7308.
3. Communications Group — 403-297-3757.

All three are located in the ERCB Head Office, at 640 - 5 Avenue S.W.,
Calgary, Alberta, T2P 3G4.

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